12/26/85 U2160-119

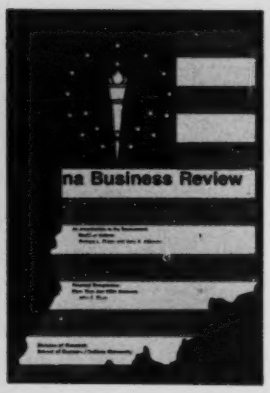
A publication of the
Indiana Business Research Center,
Indiana University School of Business

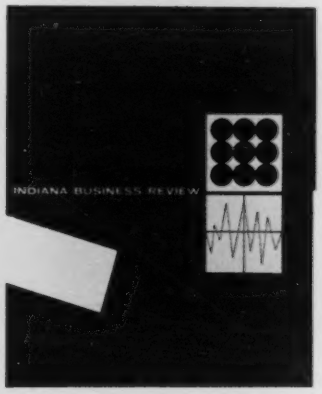
Indiana Business Review

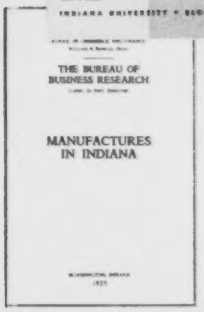
Volume 60 September/October 1985

Brian K. Burton — **Business Research at Indiana: An Informal History**

Janet L. Fedde — **Indiana's Gross State Product**







60th Anniversary Issue

Business Research at Indiana: An Informal History

In this issue . . .

At this beginning for the Indiana Business Research Center, we look back at the origins and proud record of our predecessor organizations, the Bureau of Business Research and the Division of Research. Brian Burton has put together an informal history of organized research in the Indiana University School of Business. Through interviews and document study, he has provided us with parts of the past. Any such history must necessarily omit more than it includes. Missing is mention of dozens, even hundreds of important people who have shaped concepts, words, and numbers during these 60 years. To those students and secretaries, faculty and friends, editors and readers, these pages continue to be dedicated.

Janet Fedde, one of the students now working in these corridors, has brought forward in time the Gross State Product estimates published by her predecessors. This series is often requested by those seeking a different perspective on the state's economy. Plans are in progress to make this information available more frequently.

MJM

Indiana Business Review

Published six times each year by the Indiana Business Research Center, Graduate School of Business, Indiana University.

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Morton J. Marcus, Director and Editor

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Unless otherwise noted, information appearing in the *Indiana Business Review* is derived from material obtained by the Indiana Business Research Center for instruction in the School of Business and for studies published by the Center. Subscriptions to the *Indiana Business Review* are available to Indiana residents without charge.

Brian K. Burton

During the past academic year Brian K. Burton was an assistant to the editors of both the Indiana Business Review *and* Business Horizons.

In September 1985, the Indiana University Board of Trustees approved a proposal that caused little stir in the University community. That proposal separated into two units what had been the Division of Research in the School of Business.

One unit, called the Indiana Business Research Center (IBRC), is under the direction of Morton J. Marcus, Indiana University research economist. It continues the research activities formerly lodged in the Division.

The other, called Academic Support Services, is directed by H. Donald David, formerly the administrative director of the Division. It coordinates the various support services that had been handled by the Division.

As mentioned, the Trustees' approval caused little stir. That is as it should be, for the Division of Research, under whatever name, has been quietly working behind the scenes for Indiana for 60 years, contributing greatly to the concept of state economic research.

It was appropriate, in fact, that this latest change should come in September. Not often can an organization celebrate both its birth and its sixtieth anniversary in the same month and year. September 1925 marked the beginning of what would become, in September 1985, the Indiana Business Research Center.

In 1925 there was no School of Business. There was, however, a School of Commerce and Finance, located on Bloomington's Third Street in Commerce Hall. That building is known today as Rawles Hall, named for the dean of the School at that time, William A. Rawles.

Enter Lionel Edie and the Bureau of Business Research

One of the few faculty members in the School was Lionel D. Edie. He had received his education at Colgate University in Hamilton, New York, a part of the eastern educational establishment. Several business schools in the east had research arms by that time, and some Midwestern universities were copying them. Indiana University decided to join the trend, and Edie was chosen to direct the newly formed unit. It was to be called the Bureau of Business Research.

Although the Bureau has received scant notice in the histories of Indiana University, the fact of its founding was mentioned in the *Indiana University Alumni Quarterly* in October 1925. The magazine stated, "Indiana University, keeping step with other mid-western universities, has established a bureau of business research, to be conducted by the School of Commerce and Finance. The general purpose is to carry on work in research that will be of special value to the business men of the state."

Another interpretation of that statement is that, through its research, the Bureau would help Indiana's economy, something that is still the objective of the ultimate successor to the Bureau, the Indiana Business Research Center.

The *Indiana Business Review* Is Born

Records from that time are very sketchy, but what must have been one of Edie's first ideas has proved to be the most lasting contribution that the Bureau has made, both to the state and to the academic community. In cooperation with the Fletcher American National Bank, as it was then called, Edie founded the *Indiana Business Review* as a monthly review of business conditions in the state.

The IBR's *national significance is that it was the first publication devoted solely to a review of business conditions in a single state.*

The *IBR's* national significance is that it was the first publication devoted solely to a review of business conditions in a single state. Its significance to the Bureau, the Division, and the Center is that it is its longest-

lasting publication, a kind of "house organ." Although it has changed quite a bit over the years, the *IBR* still serves to bring business-related information to its readership.

The first *IBR* was published on March 10, 1926, by Fletcher, in cooperation with the Bureau. This arrangement would continue for seven years. The Bureau collected the data and edited the material, with Fletcher publishing and distributing the resulting journal.

The *IBR* was not the Bureau's first publication, however. That honor belonged to a booklet entitled "Manufactures in Indiana," written by Edie and published as *Indiana Business Studies No. 1* in 1925. This was the first of the Bureau's publication series. *Indiana Business Studies* appeared periodically until 1970.

During these early years the Bureau was housed in two separate places, indeed in two separate cities. The main office was in Bloomington, at the University. The *IBR* office, however, was located in Indianapolis. This was an obvious location because Fletcher published the *IBR* and Fletcher was in Indianapolis. The quarters for the staff there were provided without charge by the Indianapolis Chamber of Commerce.

By October 1926 the Bureau had developed something new for Indiana, an index of industrial production in the state. The index initially was based on five items: kilowatt hours of electricity consumed, tons of pig iron production, square feet of new building contracts, cubic feet of building stone mined, and tons of coal mined. None of these statistics were measured in dollars, keeping inflation or deflation out of the picture. Perhaps more importantly, however, all of them were available on a monthly basis and were released shortly after the particular period ended.

This index, which eventually came to be called the Indiana General Business Index, was a major feature of the *IBR* for some time, although it was modified as more sophisticated methods were found. For many years the index was presented graphically on the front page of the journal. With format changes and technological changes, the index now has disappeared from the pages of the *IBR*.

Lionel D. Edie (1927)

Meanwhile, Edie continued to work in other areas. He published the second in the *Indiana Business Studies* series, a study of state income taxation. And the *IBR* added a feature detailing business conditions in localities throughout the state. This feature, although it has changed considerably, still appears in the journal in the form of the semiannual forecast editions.

Starr Director

By the summer of 1927 Edie decided to leave Indiana University, and the Bureau welcomed a new director. His name was George W. Starr, and he would remain director for the next 27 years. Starr was a product of Ohio State University, where he had spent two years as acting director and two years as assistant director of that school's business research bureau.

One of the first things Starr did as director was to man a booth at the Indiana State Fair. Apparently the Bureau, at that time, received quite a few letters from businessmen asking questions about one thing or another.

"Somebody thought up the idea that we had to have a place at the fair where people or businesses could come in and get information," Starr said. "What happened was we got a lot of inquiries, and I'd agree to look it up and let them know. We did a lot of work like that."

What Starr remembers most, though, was the location of the booth. "We were right next to the poultry section," he said. "Those roosters would crow from early in the morning till late at night."

Starr didn't go back to the State Fair, at least to man a booth. He did, however, start publishing research. Most of that research started with the same kinds of questions he got at that booth at the fair. He looked at everything from retail groceries to college bookstores, and for 15 years most of what the Bureau published had his name on it.

The major publishing effort, however, continued to be the *IBR*. Just before the 1929 stock market crash, the *IBR* published its first bit of research. This was a report on industrial development over the course of the state's history.

Although the Bureau and Division generally have been noted for the accuracy of their forecasts, in this period one forecast was off.

In the January 20, 1930, issue, the editors noted the sharp drop in the economy in the last quarter of 1929. They did not feel it would continue, however: "Business enters 1930 considerably below normal with the prospects favoring a reversal of this trend during the coming year."

In the January 20, 1930, issue, the editors noted the sharp drop in the economy in the last quarter of 1929. They didn't feel it would continue, however.

Of course, the trend did not reverse as the country entered the Great Depression. Still financed by Fletcher, the journal began a series in June entitled "Views of Business

60th anniversary issue

Leaders," trying to convince people that conditions would improve. By October, however, it was obvious that conditions would get worse before they got better, and the series was dropped.

As the Depression worsened, businesses around the state and nation tightened their belts. Fletcher American National Bank was not exempt from that movement. In the summer of 1932 it decided its financial condition did not warrant continued underwriting of the *IBR*, and it withdrew its support.

By this time the Bureau's office in Indianapolis had been moved from the Chamber of Commerce building to the Indiana University Extension Center (which later would become IUPUI). The *IBR* apparently was too well liked at this point for the University to let it die, and so the Bureau assumed full responsibility for its publication. That meant closing the Bureau's Indianapolis office and moving the editorial staff to Bloomington. For the first time the Bureau would be one family.

This move must have helped to free Starr from some of the more mundane duties of the directorship, for he began to take on other, outside activities. Before 1931 he had written every special study published by the Bureau, seven in three years. After 1931, however, although he still published some studies, other people began publishing as well.

Starr said of his style as director, "I saw that things got done." He did that while at the same time writing a biweekly column for *The Indianapolis Star*, serving on the Aeronautics Commission of Indiana, helping to found the Junior Division at Indiana University (now the University Division), serving on the Indiana Economic Council, and teaching transportation and public utilities in what eventually became the School of Business.

The Bureau did not change very much during Starr's tenure. What changes did occur were gradual. Starr recalled that it was "not a big organization by any means, with not a lot of difference" between when he started and when he resigned in 1954.

The *IBR* began to change from a mere pamphlet with figures in it to a full-fledged journal. In 1935 a section on retail news was added, and in 1936 came the first actual forecast, forming a supplement to the journal. In 1937 a real estate section was introduced. A major change came in 1940. Printed on the inside back cover of the September issue was an article, "Promoting Trade in the Small Town," that had nothing much to do with specific business conditions in Indiana. This was the first time such an article had been printed in the *IBR*. Many more like it would follow in the next 14 years.

The *Indiana Business Studies* continued its output throughout Starr's tenure as director. Some of the subjects covered included township government, the costs of retailing coal, state disbursements, corporate earnings, a cost accounting bibliography, and land use in Bloomington from 1818 to 1950. Some 37 studies were published in the series before Starr's resignation, an average of more than one a year.

Another innovation during Starr's directorship was the *Indiana Business Reports* series. This publication began in 1939 with reports and proceedings from conferences held at Indiana University. The first conference proceedings to be published were from the Sales Management Conference in 1939. The first in this series *not* to result from a conference was No. 7, "The Materials and Uses of Business History," published in 1941. Another paper published in this series was "Research Needs in Business During the '50s," published (appropriately enough) in 1950 as No. 13.

COMMERCE HALL (from the 1923 *Arbutus*). The building, which cost $250,000, was dedicated in April 1923. It is now called Rawles Hall, after William A. Rawles, who was chosen dean when the School of Commerce was inaugurated in 1920. The 1927 issue of the *Arbutus*, the Indiana University yearbook, reported: "A valuable department in this school is the bureau of business research, operated and conducted under the direction of L. D. Edie. The work of this department is gaining wide recognition."

The Link That Missed

The Bureau would have changed quite a bit more if then Dean of the School of Business, later Indiana University President, and current University Chancellor Herman B Wells could have had his way.

In 1937 Wells, in concert with other business school deans, tried to get federal aid for business research bureaus. The aim was for business research bureaus to develop the same relationship with the U.S. Department of Commerce that agricultural experiment stations had with the Department of Agriculture. This would bring more federal funds for higher education into

those state universities that did not have schools of agriculture. The land-grant schools, and those other schools with agriculture programs, fought and defeated this proposal.

In 1937 Wells, in concert with other business school deans, tried to get federal aid for business research bureaus. The aim was for business research bureaus to develop the same relationship with the U.S. Department of Commerce that agricultural experiment stations had with the Department of Agriculture.

In his book *Being Lucky* Wells wrote that, if the proposal had been enacted, "it not only would have strengthened our business school but also would have greatly aided in the development of business research and business in the state of Indiana."[1]

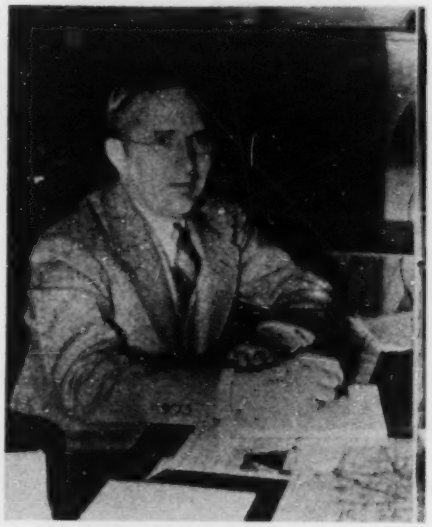
The *Indiana Business Reports* series and the *Indiana Business Studies* series both almost completely stopped publishing during World War II. The *IBR*, however, continued monthly publication and added a column entitled "Defense Items."

Starr and the Postwar Years

After the war the Bureau got a boost with the hiring of Schuyler F. Otteson as professor of marketing and associate director of the Bureau. Otteson, like Starr, had ties to Ohio State, where he had just earned his Ph.D.

Otteson's arrival in 1948 coincided with the beginning of another publication series, the *Indiana University Business Information Bulletin* series. This series did exactly what its title suggests: it gave businessmen information that they might need in their businesses. The first in the series was "What You Should Know about the Taft-Hartley Law," published soon after the law was passed.

Except for *Indiana Readings in Business*, which were used mostly for classroom instruction, the *Business Information Bulletin*



George W. Starr (1940)

became the most prolific of all the irregular series published by the Bureau and Division. In all, 60 *Bulletins* were published, compared with 47 *Reports* and 40 *Studies*.

With Otteson on board, Starr was free to continue his outside work. In the 1950-51 school year Starr was on sabbatical, and Arthur E. Warner was acting director of the Bureau. Then, beginning in 1952, Starr became director of the Gross Income Tax Division of the State of Indiana. He was still a member of the Indiana Economic Council and still teaching. In 1954 Starr decided he was trying to do too much. He resigned as director of the Bureau in the summer of 1954.

During his years as its director George Starr had given the Bureau a high profile. Starr was well known in Indiana political circles. Once he was even asked to run for governor. Well respected in the state, he advised both Republican and Democratic administrations. He continued on the faculty until 1962, and now lives in retirement in Columbus.

Otteson Takes the Helm

When Starr left, the natural thing to do was to appoint Schuyler Otteson director, and that was done. Coinciding with that appointment was a change in the publicly stated goals of the Bureau. Starr had published a great deal of research through the Bureau, but Otteson was more of an idea man, someone who could create something new for the Bureau to do. With his appointment the emphasis was changed to publication and support of faculty research, instead of doing the research within the Bureau.

The first thing Otteson did was to send out a survey to *IBR* readers finding out if the journal was satisfying their needs. It hadn't been substantially changed from its birth in 1926.

The survey results came in, and what resulted from them was staggering: in effect, a whole new journal came into being. The *IBR* format had been a series of articles, the same every month, focusing on different areas of business activity in the state. The new format combined all of these articles into one general summary article. The one-page article on a business-related topic was expanded and formed a major part of the journal. The data were still published in a section in the back of the journal, including the Indiana General Business Index, a feature of the *IBR* since its founding. But the reports from cities around the state, also a regular feature, were dropped.

Perhaps most significantly, for the first time in the *IBR's* history there were regular economic forecasts. These were published twice a year, in April and October, each covering the ensuing six-month period. According to Otteson, this was an expansion of and improvement on what had gone before.

"They used to go out and give a luncheon show and present a forecast," he said.

John Lewis, later to gain national recognition, was the *IBR's* economist. He worked with the dean of the business school, Arthur M. Weimer, to establish the precursor of today's Business Outlook Panel.

"It was uncanny how close we kept coming all the time in the published ones," Otteson recalled, adding that the forecast programs he would take on the road didn't always come that close. "Nobody remembered those, though," he chuckled.

The first issue in the new format, which

[1] Herman B Wells, *Being Lucky* (Bloomington: Indiana University Press, 1980): 83-4.

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A BUSINESS OUTLOOK PANEL from the 1960s, speaking at the French Lick Sheraton. Panelists on this occasion were, from left, Jack R. Wentworth, Robert C. Turner, Charles F. Bonser, and Ross M. Robertson.

also included a new design for the journal, appeared in February 1955. Soon after that, the second big project of Otteson's tenure was given to the Bureau. It was nothing less than a forecast of where Indiana's economy would be in 1970, 15 years down the road.

Otteson recalled that the Bureau got $10,000 for the project, far less than it needed, and the state wanted it done in six months. University professors each took a section of the economy and analyzed it, and the result was a 14-volume study, *Indiana's Economic Resources and Potential*, which was done on time and on budget.

Otteson remembered a special legislative session held at the University to unveil the study. All the legislators got a large, heavy copy. He said the impression the study made, not only on the legislators' laps but on their minds, was an important one.

"They couldn't quarrel with it, they couldn't replicate it, and they didn't know enough detail to argue about it," he said. "They took all of our predictions and just built them into the budget."

Not only that, Otteson said, but 15 years later, in 1970, most of the forecasts made in that study proved to be amazingly accurate. "If anything, they were conservative," he recalled.

The Birth of *Business Horizons*

With two successful projects under his belt, Otteson decided to try something else. "Our goals far exceeded our resources, no question about it," he said. "But we decided we'd try to put out a magazine which was in competition with the only one that really was known nationally, the *Harvard Business Review*."

Otteson and his staff decided to start the magazine as a supplement to the *IBR*. It was also decided to use home-grown talent, so to speak, with all but one of the contributors from Indiana University. The special supplement was issued in December 1956. It was called *Business Horizons*.

"It was very well received, and the faculty got very excited about it," Otteson said. "We thought we'd take one more shot at it."

This next shot was a special issue in June of 1957. The Bureau, in an arrangement with an advertising professor, sold advertising space. As a result of some problems in communication, the Bureau wound up with 10,000 copies to distribute. Of those, to meet Post Office regulations, 5,000 had to be sold. With an amazing effort on the part of many people, the subscription level of 5,000 was reached. (Then-President Herman B Wells was one of those who was persuaded to purchase a copy.) The Bureau was home free. More to the point, *Business Horizons* was off and running.

"That [issue] met with considerable success," Otteson said. It was a good thing, he added, because a prominent notice in the magazine stated that *Business Horizons* would become a quarterly magazine with a separate existence in December of that year. That success was "enough that we dared to follow through with our commitment," Otteson said.

To tell the world about *Business Horizons*, the Bureau held two press conferences, one in New York and one in Chicago.

"We got national coverage announcing it," Otteson said. "But it also was the day that Sputnik went up."

Business Horizons continues to this day as one of the top journals in the business world. Jack R. Wentworth, now dean of the School of Business, was assistant director of the Bureau when the first *Business Horizons* appeared. He said, "*Business Horizons* has played a significant role in the reputation of the School. I think it is second to the *Harvard Business Review* in terms of size, prestige, and when it started. It's done a lot to help the ranking of the School."

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A good deal of the credit for the success of *Business Horizons* must go to the five editors the journal has had in its history. Otteson, its first editor, continued in that position

even after leaving the Bureau. William G. Ryan took Otteson's place in the fall of 1966 and directed the journal for 10 years, the longest term of any *Business Horizons* editor. Ryan stepped aside in the fall of 1976, and John D. Long took over while the search for a permanent replacement continued. That search ended with the appointment of Harvey C. Bunke in the fall of 1977. Bunke continued to hold that position, and several other posts as well, until the summer of 1985, when Joseph Hartley took over the reins.

The End of the Fifties

Not content merely with launching *Business Horizons*, Otteson tried something else. He established a Case Collection Unit and started another publication series, the *Indiana Case Studies in Business*. This series, however, was not so successful as were the others in the Bureau's history, and only three volumes were published: one on home construction, one on family-owned businesses, and one on personnel administration.

Another project during the Otteson years was not destined to last. This was a weekly television show, beginning about 1955, on Bloomington's Channel 4. Many faculty members participated in the live broadcasts, which ended sometime before Otteson resigned.

Meanwhile the *IBR* was rolling right along. In January 1959 it underwent another style change, and in the same month it reached the 7,000-subscriber mark. Then as now—and ever since its beginnings—the *IBR* is sent free to any Indiana citizen who requests it.

Another perspective on the Bureau during the Otteson years comes from Charles F. Bonser. Then a graduate student in the School of Business, Bonser is now dean of the School of Public and Environmental Affairs at Indiana University. Bonser served the Bureau as a graduate assistant, as assistant director while still a student, and then as associate director in the 1960s. He remembered the Bureau as a pleasant place to work.

"It was a very folksy, kind of family place," he said. "Most of the activity revolved around producing *Business Horizons* and the *Indiana Business Review*. As a graduate assistant I did a lot of *IBR* stuff, a lot of trying to improve the knowledge of the economy of the state of Indiana, which we didn't have a lot of knowledge about."

Then as now—and ever since its beginnings—the IBR *is sent free to any Indiana citizen who requests it.*

In 1960, the administration called a halt to any new projects at the Bureau. As Otteson said, "That took all the fun out of it for me."

That summer Clare Barker, who had been head of the marketing department, died. Otteson resigned as director of the Bureau to become marketing's new chairman. In 1971 he became dean of the School of Business, retiring in 1983.

There are several enduring legacies from Otteson's directorship. One of the most important may be the relationship between the faculty and the Bureau.

"I did my best to keep a very close relationship with the faculty," Otteson said. "The lifeblood of the school is the faculty; if they don't support you, you're dead."

One way Otteson helped that relationship was to set up a publications committee that reviewed anything, in any series, that the Bureau might publish.

Schuyler F. Otteson (1965)

"You could say it was like a refereed article," he said. "If you can say that an article was published in a refereed journal, it has 10 times the weight another article might have."

Another change during Otteson's years as director was in the location of the Bureau. In 1956 it moved from Woodburn Hall, where the School was at that point, to a house at the corner of 10th Street and Fee Lane. Ten years later the School itself moved to a new building constructed on that site. The Bureau moved several times before its eventual relocation in the main building a short time later.

Wentworth Becomes Director

When Otteson resigned, again a successor was easy to find. That man was Jack Wentworth, who received all three degrees (B.S., M.B.A., and D.B.A.) from Indiana University.

"Jack had been with me since '56," Otteson said. "He handled a lot of the day-to-day operations as assistant and associate director. He knew what we were supposed to be doing."

Just before Wentworth took over, a sign of the times showed the Bureau entering the modern age. For the first time a computer was used to compile an index that appeared in the April 1960 *IBR*. Wentworth said it wasn't surprising that the Bureau got a computer before any other department in the School.

For the first time a computer was used to compile an index that appeared in the April 1960 IBR.

"Dean Weimer looked at the Bureau as kind of the research arm of the School," he said. "We were the first to try things, and if there wasn't a place for something, we got it."

Although there was a new director, the Bureau itself didn't change much in the transition. Publications continued to appear. In 1961 a new series, the *Indiana Busi-*

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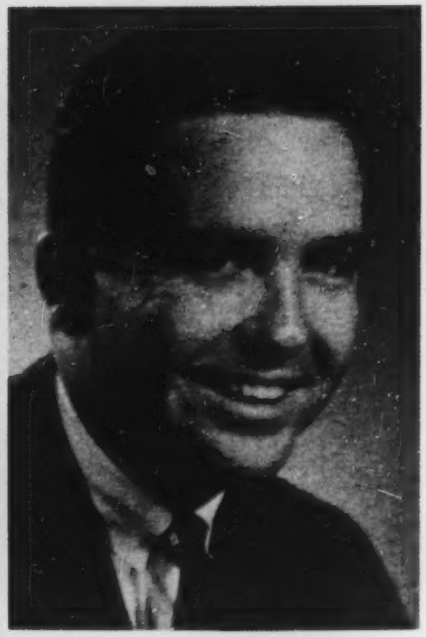


Jack R. Wentworth (1965)

ness Papers, made its appearance with a paper entitled "A Vivid Description of Our Changing Business Environment," written by Herman C. Krannert. In the beginning this series provided a forum for work of a national and international nature, including studies of the federal budget and of housing in Vienna.

As the years passed, the *Indiana Business Papers* series changed its emphasis. By this time two of the older series were slowing down. The *Indiana Business Studies* hadn't published anything since 1956. The other, *Indiana Business Reports*, had evolved from publishing reports of conferences to publishing other types of studies. The *Business Papers* series then started doing what the *Business Reports* series previously had done—it published conference proceedings. By the end of the 1960s, however, all of the publication series were in decline.

The publication program as a whole was one of the two areas in which Wentworth saw great change in the Bureau during his years there.

"When Otteson took over, the Bureau was a small office with a secretary," Wentworth remembered. "There had always been a publications program, but it was an in-house type of thing. That operation really grew. We became almost a small University press. Very often we had little monographs that became very popular. We had some dissertations that turned into books, as well."

Some of the publications were really reprints. The Bureau combined *Business Horizons* articles on one subject and published them in book form.

The State of the State

The other major change during Wentworth's tenure was the extent to which the Bureau worked with state government.

"I would say there was a period of years there when we had probably a closer relationship with the state of Indiana than we ever had before or since," Wentworth said. "We got involved with being a data base for the state to a larger extent. The Bureau had for many years collected local data, but in that period we had a 'state' economist for the first time, and we started getting a degree of sophistication. Of course, at the same time computers were becoming more useful."

A good part of the close relationship with the state was the result of Bonser's returning to the Bureau. He had left in 1963 to become director of the state's commission on tax and financing policy. When he returned in 1965, Bonser had a wealth of contacts in state government.

Another reason for the close relationship between the Bureau and the state was the presence of an economist specifically for the state of Indiana. This was an outgrowth of a position developed when Otteson took over the directorship, a position first filled by John Lewis.

Lewis was the Bureau's business economist, the coordinator of the forecasts the Bureau made, and he wrote many articles for the *IBR*. His writings were nationally oriented, and he received national publicity. In 1962 he was appointed to President Kennedy's Council of Economic Advisers.

Lewis's position was taken by Irvin Grossack, and Robert Turner became the Bureau's economic consultant. All of these men were faculty members in the Department of Business Economics and Public Policy. In 1966, however, the Bureau enlisted an economist specifically to study Indiana. His name was Lawrence Kreider.

"I saw the state as a very important role for the Bureau," Wentworth said. "I felt one of the reasons for the Bureau was to be close to the state, to help the state, to do things for the state that no one else was quite in a position to do."

Kreider's appointment changed the Bureau's emphasis to research centering on Indiana's business and economic environment. That meant a change for the Bureau's oldest publication, the *IBR*. Except in its early years, the *IBR* had a relatively national focus, even after the introduction of *Business Horizons*. Now, however, its emphasis would be on Indiana.

With the creation of the new position, "You had an individual who was dedicated to the state, as Morton [Marcus] now is," Wentworth said. "It obviously created more articles, data, and research devoted to the state."

That change in emphasis led to a change in format for the *IBR*. In fact, it led to one publication being replaced by two.

"We began to see two uses for the *IBR*," Wentworth said. "One was data, which needed to come out monthly at that time. People used it, banks used it, the state used it for budget forecasts. The other was the result of research projects, articles, and so on. We decided to separate the two."

The result was the creation of a Data Supplement, which was published monthly. The *IBR*, meanwhile, was published six times a year.

At the same time a new feature was added. More accurately, an old feature was resurrected. In the January-February 1968 issue, the first in the new format, the *IBR* ran a number of articles containing the outlook for several metropolitan areas in the state. The idea was Bonser's.

"We tried to accomplish a couple of things," Bonser said. "One was trying to get better, closer-to-hand information about what was going on in the major cities in the state. It was also a way to bring the regional

1925-1985

campuses in, to make them feel a part of what we were up to."

The metro outlooks did not survive as a regular feature in every issue, but the regional outlooks in today's semiannual forecast issues are their direct descendents.

The Bureau of Business Research did several studies during Wentworth's tenure. One was a major study of the tax system in Indiana.

"The excise tax we now pay on automobiles is a result of that study," Wentworth said. "There was a personal property tax on automobiles, payable on any car you owned on March 1. It was not very sound."

Another major contribution was a $250,000 local economic development study completed for the State Department of Commerce. Other topics studied included the state's library system and court system, migration patterns, and—a subject that would become popular in ensuing years—population projections. Wentworth said that, through these and other, comparatively smaller, studies, the Bureau was trying to get information into the hands of the business community.

"Our greatest service to the industry of the state was information," he said. "We were becoming a repository of data, and the question was how to make it accessible to people. The Data Supplement was one way to do it."

Another way was through the travels of Kreider, the Bureau's Indiana expert and a pathfinder in the Bureau's history.

"Larry had all these charts," Wentworth said. "That was before we really used the computer. We kept them up to date and people would come into our office—bankers, people from all over the state. Larry had his traveling show, and he'd take the charts with him."

In 1970, Morton J. Marcus, the next Indiana economist, came to what was still the Bureau. It wasn't to be the Bureau for much longer, however. In one of Wentworth's last acts as director, he changed its name from Bureau of Business Research to Division of Research.

The Division of Research

"I felt that 'Bureau' was not the right kind of name for what we were doing," Wentworth said. "There were no changes when we did it. The substantive change preceded the name change."

Just after that name change was accomplished, at the end of 1970, Wentworth left the Division. He had continued the leadership style and faculty relationships that Otteson had started and had added a touch of his own personality as well.

"I tried to get the best people we could, and give them a lot of rope," Wentworth said. "I also tried to play an active, visible role. We did a lot of public speaking, talking to various groups around the state.

"I felt that we should become as much involved with the faculty as possible," he added. "I looked at a role of the Bureau as being faculty support. I think we did a reasonably good job of it. If they had a statistical problem or needed data, we had a fairly sophisticated data base. When you're physically removed from the faculty as we were, you need to work at maintaining the contact. But because we were separate, we developed a tremendous esprit de corps within the Bureau."

The Pfister Years

In 1971 Richard L. Pfister succeeded Wentworth as director of the Division. Pfister, who had received his Ph.D. from M.I.T., was a professor of applied urban economics. That was a departure from the previous two directors, Otteson and Wentworth, who were both marketing professors. However, Pfister was no stranger to the Division, having worked closely with both Wentworth and Bonser prior to becoming director.

When Pfister became director, Marcus was continuing work on a project known as the Indiana Information Retrieval System, or INDIRS. This was to serve the state, particularly the Department of Commerce, as part of its economic development program. As Marcus worked with the project, it expanded, becoming a key part of the Division's work.

"It was an opportunity to use the most modern technology that we had available here to develop a comprehensive data base. That base could be quite useful for research purposes but also in the work of government," Marcus explained. "That has become the basic data base on which many of our activities are founded."

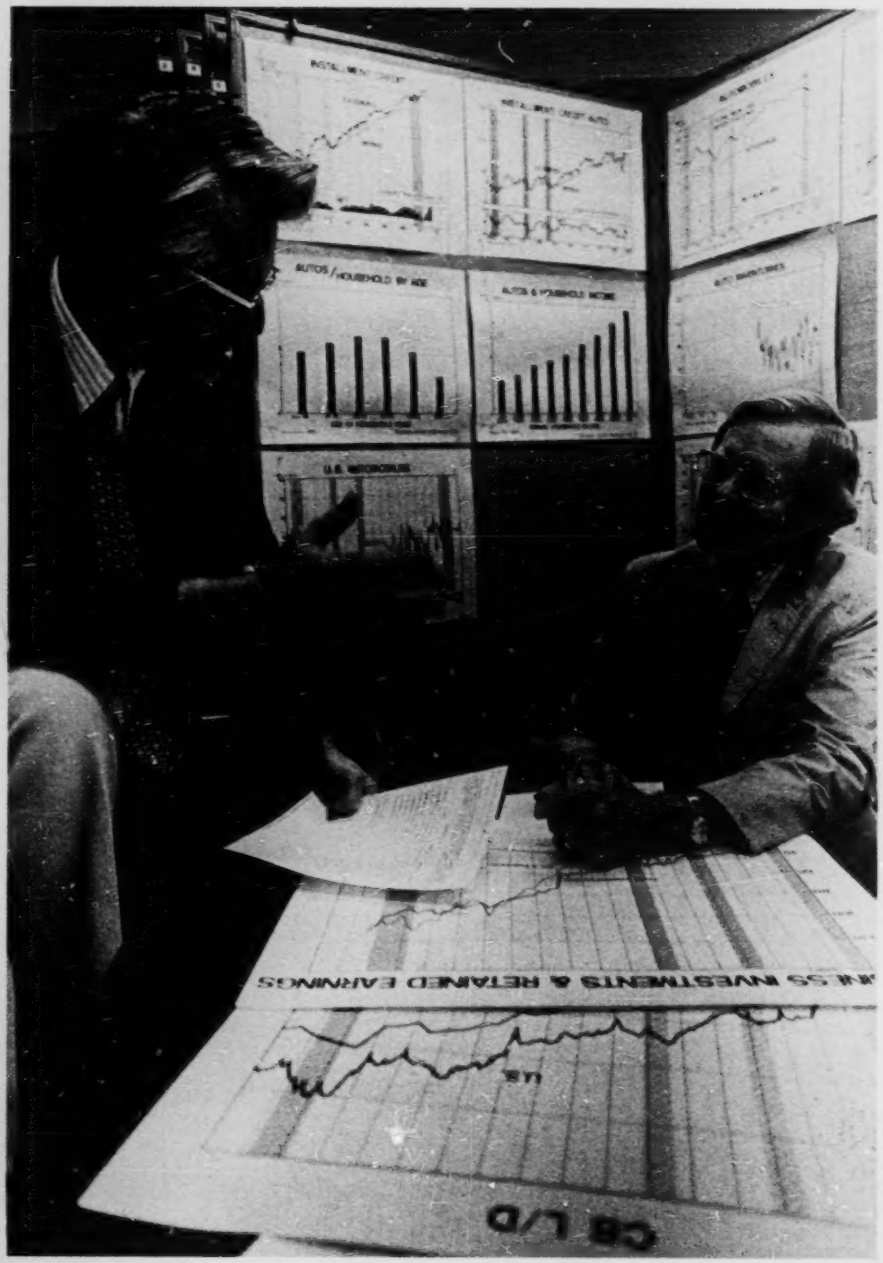
And even though INDIRS as a data base is now established, the ideas that spawned it are still evolving.

By 1972 INDIRS was fully operational. In that year the Division received a federal grant through the Indiana State Library to make the data base accessible by libraries around the state. Sixteen libraries were chosen to receive the necessary equipment and training, so that people in any part of the state would not have to travel far to be able to use INDIRS. Five years later INDIRS went through a major redesign. The first article in the *IBR* using the new INDIRS appeared in the July-August 1977 issue. And even though INDIRS as a data base is now established, the ideas that spawned it are still evolving.

"This year we have a contract with the Indiana Economic Development Council to develop what we are going to call EDIS, the Economic Development Information Sys-

Richard L. Pfister (1973)

60th anniversary issue



H. DONALD DAVID (left) AND RICHARD L. PFISTER CONFER IN THE "CHART ROOM" in the Division of Research (early 1970s). Pfister served as director of the Division and David as its administrative director. Visitors in search of data frequently visited the Chart Room.

tem. It is an outgrowth of INDIRS," Marcus reported.

In 1972, the same year that INDIRS came on line, the Division completed another economic development study, the Indiana State Economic Development Project. In 1973 it finished a study projecting revenues and expenditures for state government. Another project, which continued for several years, involved looking at inflation's impact on the state's institutions of higher education.

But, although the Division was busy, Pfister remembers these years as an era of belt-tightening.

"This period was when budgets began to get tight," he said. "We didn't have a lot of outside funding, and there was a substantial cutting back of the internal funding."

One of the factors that contributed to the money crunch was a change in the state Department of Commerce. "They have always gotten quite a bit of money in the form of federal funds, and at one time they used those funds to contract out their research," Pfister said.

Although the Division did some small studies for the Department of Commerce, Pfister noted a change: "The tendency was beginning for the Department, when they got money for studies, to add staff of their own and to do those studies in house. We had substantially less in the way of research contracts with state agencies than in the previous decade."

The budget crunch also affected the Division's publications program. And that affected the Division's staff, which had expanded to 15 full-time people in the 1960s.

"When budgets got tight, we really cut back on the publications operations," Pfister said. "When I became director, that had already slowed down, and most of the book publishing was a losing proposition anyway. As the book publishing activity slowed down, we had less need for the editorial staff. We never did have a large internal research staff. We relied pretty much on faculty members to direct research projects."

Added to the budget problem was the fact that, as the School's prestige was rising,

so was the pressure on professors to perform according to the School's expectations.

"It was more and more difficult for us to get faculty members involved in projects dealing with just state and local issues and topics," Pfister said. "There was tremendous pressure on faculty to publish in refereed journals."

During this period the various publication series died. The *Business Studies* series stopped in 1970, the *Business Information Bulletin* and *Business Paper* series ceased in 1971, and the *Business Reports* series ended in 1973. Very few books were published after 1971, and most of the ones that were published dealt with research projects which would have been done in any case.

The *IBR* continued to evolve. During Pfister's tenure there were several special, one-topic issues. Some of these topics included consumerism, real estate, President Nixon's economic policy, and the 1973 tax package. Another change in format came in 1974, a change prompted by the Indiana Regional Economic Development and Planning Study done by the Division. The metro outlook articles were dropped from most issues. Instead, the semiannual forecast issues included forecasts from the major cities in those regions which had been developed in that planning study.

Business Horizons also underwent a transition in this period. It had changed from a quarterly to a bimonthly magazine in 1968. By 1972 it had stopped selling advertising space.

At about this time H. Donald David was appointed to the new position of administrative director. Although David's responsibilities covered almost every aspect of the Division's work, his major efforts, then as now, were directed to faculty support. The Division offered the faculty a keypunching service, a word processing center, the School's Behavioral Laboratory for research purposes, and the Business Computer Center. Another activity that David coordinated was the processing of faculty/course evaluations. He also supervised the *Indiana Readings in Business* publications series. This series consists of materials faculty members want to use in their classes. The material is gathered together and sold to students. The latest reorganization groups these functions under the Academic Support Services umbrella, with David still the director. He also continues as business manager for *Business Horizons*.

Something else changed at this time. In November 1974 the School of Business was reorganized. The Indianapolis and Bloomington programs were combined in one administrative unit. As part of that reorganization, the Division opened an office on the Indianapolis campus. Once again the Division had offices in two cities, just as it had 50 years earlier.

The Indianapolis office was initially staffed by students, but in 1981 Systems and Programming Manager Lowell McCoskey began splitting his time between the two offices. By the beginning of 1985 McCoskey was working at the Indianapolis office full-time.

"We are all one organization," McCoskey emphasized. "In Indianapolis we have systems development, while Bloomington has operations, production, and maintenance." EDIS, which will incorporate parts of INDIRS and other systems, is the newest information system to be developed in Indianapolis.

Although some research in this area also goes on in Bloomington, one distinctive feature of the Indianapolis operation is its survey work. Surveys and Information Coordinator Terry Creeth runs what is part faculty support and part public service.

H. Donald David (1973)

"We've worked with the School of Liberal Arts, the School of Business, Labor Studies, and we've done survey work outside," Creeth said. "We've done work for the Indiana Arts Commission, realtors, lumbermen, and so on."

It is possible that the IBRC's survey work, which began in 1982, will be its fastest growing function.

"People are realizing the importance of the service we provide," said Creeth, "and I think the demand for it will grow. Those services are appreciated. We get positive feedback, and we get referrals, too."

By 1975 Pfister was a very busy man. He was Division director, he was head of the Institute for Applied Urban Economics, and he taught classes as well. Something had to give, and Pfister resigned as director in the summer of that year.

Pfister was not replaced as director. Instead, Marcus assumed overall responsibility for the *IBR* and research activities, while David assumed overall responsibility for many administrative and other functions.

"That system worked and worked well right up until the present," Marcus said. "When you've got something working well, you don't fill another administrative position."

Projecting Populations

The Division was not only working well, it was also working hard. In 1976 another important study was finished. Working with the State Board of Health, the Division projected the population growth of each Indiana county until the year 2000. The projections were broken down into 17 age groups. This continued a study begun under Wentworth, but it used the 1970 census data, the most current available.

But the 1976 study marked only the beginning. The projections were revised in 1978, and a series of projections broken down by township were published in 1979. In 1983 the county projections were revised yet again, this time using 1980 census data,

60th anniversary issue

Morton J. Marcus (1984)

and currently the township projections are being updated. According to Marcus, population projections are among the most important work that the Indiana Business Research Center does.

"Anyone who's planning capital facilities—meaning a sewage facility, a shopping center, or housing—wants to have some information about the future of the population in that part of the state," Marcus said, adding that the Center is the perfect entity to conduct such a study.

"If these studies are done by each locality, there is strong political and social pressure to 'make my town look good.' When we do them," Marcus explained, "we have no particular biases about an area of the state."

"If these studies are done by each locality, there is strong political and social pressure to 'make my town look good.' When we do them," Marcus explained, "we have no particular biases about an area of the state."

Once the projections are done, Marcus said, they become the basis for decisions about many building projects, not only governmental projects but private ones as well.

In the years following 1976 the Division studied taxes, warehousing in Indianapolis, dental productivity, and the licensing of electrical contractors. In 1980, however, came a monumental project—the Econometric Model of Indiana.

The Econometric Model

This project had first surfaced during Pfister's tenure, but it was put on the back burner until the School could fund it. Once the funding was there, Pfister and Marcus worked with R. Jeffery Green, a professor in the economics department, to devise the Econometric Model.

While the Indiana General Business Index charted where the state's economy had been, the Econometric Model tries to find out where it will be going.

"We started trying to do short-term forecasting—what is going to happen in Indiana in the next few years," Marcus said. "We tried to look at various employment and income factors in detail, and we were very successful, with the support of major utilities in the state of Indiana, in financing our activity. So we were able to provide a comprehensive quarterly forecast of the state economy."

The project was completed, or as much completed as a changing model can be, in 1981. It was deemed important enough that Indiana University President John Ryan's report to the governor led off with a discussion of the Division. The model also is used routinely in putting out the quarterly forecasts. Two of the forecasts are used each year in the semiannual *IBR* forecast issues. What might be particularly important, at least to the future of the Indiana Business Research Center, is the way the model was funded.

"In a way that's a departure and an innovation, because we are now doing some work with private-sector funding," Marcus said. "And that is very important. It looks like we are not going to be able to depend as much in the future on public-sector funding as we did in the past, so we are going to have to find ways of doing work for the private sector.

"If we can maintain the integrity of the School's tradition and still have private-sector funding, I think we will have helped the state," Marcus added.

"If we can maintain the integrity of the School's tradition and still have private-sector funding, I think we will have helped the state," Marcus added.

Lionel Edie and George Starr, the Bureau's first directors, would recognize one source of private-sector funding that the IBRC has today. Three Indianapolis banks—the Indiana National Bank, Merchants National Bank and Trust Company, and the Bureau's old friend, American Fletcher National Bank and Trust Company—are cosponsoring the IBRC's publication of the *Indiana Factbook*, due out early next year.

Changing Needs

The Econometric Model was introduced in the February 1981 issue of the *IBR*. That same month *Business Horizons* went through its first real style change in 13 years. And style change in the *IBR* was not far behind.

"It was Don David's excellent suggestion that the Data Supplement stop being just numbers and that we put text to it every month," Marcus said. "We did that for several years, but the cost of postage and the cost of preparation and the amount of time that was involved made it almost impossible to continue, especially during the period when we were getting fewer and fewer resources."

So the Data Supplement was dropped, and the *IBR* went back to its old ways. Now it came out 11 times a year instead of monthly. But soon it became obvious that even this changed format, which began in January 1982, wouldn't work.

"We had the same kinds of problems," Marcus said. "How do we meet a monthly deadline when we don't have a staff, when we don't have the organization to do that?"

Gradually the number of issues per year was dropped to six. And eventually the tables that had been in the journal from the

beginning were dropped, to be published only if space was available. Marcus said that the tables were dropped, at least in part, because the world had changed.

"Today you can pick up a newspaper and get a lot of the information we used to publish," he explained. "Our role now has to be much more analytic. And it has to involve providing information within a context as opposed to just laying out numbers."

One project currently under consideration at the IBRC is a step in that direction. "What we are trying to do right now is to work with a few communities to see whether we can provide better local information by reviving some of what we used to do many years ago, but in a new format, recognizing the electronic technology," Marcus said.

"We are trying to investigate the possibility of having a Chamber of Commerce collect its own data," he explained. "We would build a set of progams that they could use on their computer to produce a local Business Index. What we can do is prepare materials for others to distribute. At the same time we can work on the analytical techniques, we can work on implementation techniques that would help a Chamber of Commerce and other agencies collect information and process that information locally."

All of this is part of an evolution the Indiana Business Research Center is going through because of the technological change in the world today. That change will continue to affect the IBRC for years to come.

"I see us continuing the tradition of trying to provide information about the state of Indiana as we do now," Marcus said. "The nature of the information will change as there are changes in technology and changes in the concerns that people have. It may very well be that we will have to get much more heavily involved in international data, because the economy of Indiana is an international economy. I don't see any fundamental changes. I see a great deal of change in technological possibilities."

The change of name has not changed some historical attitudes within the organization, particularly in three areas: state government, relationships with faculty, and AUBER.

"I see us continuing the tradition of trying to provide information about the state of Indiana as we do now," Marcus said. "The nature of the information will change as there are changes in technology and changes in the concerns that people have."

State government. "State universities ought to work closely as a sort of research arm of the government," Marcus said. "They can be independent, and they help guide policy."

Relationships with faculty. "It is a question of developing a relationship with faculty members so that their particular skills can be brought into place," Marcus emphasized. "It takes time to develop those relationships, and it takes a reward system within the university that says to faculty members, 'If you work on an Indiana-related project and produce a report that is not published in a professional journal, you will still be recognized for that.' We do find more faculty response today than, say, five years ago."

AUBER. Marcus, like his predecessors, is active in the Association of University Bureaus of Economic Research, or AUBER. Otteson was one of the people who founded the organization, and Wentworth is a lifetime member and past president. In fact, Wentworth changed the organization's name from Association of University Bureaus of Business and Economic Research to its present name. Noting that Wentworth also changed the Bureau of Business Research to the Division of Research, Marcus mused, "I wonder if, as dean, he'll change the name of the School."

On a more serious note, Marcus said that membership in the 140-member organization provides some important benefits to the Center.

"The main AUBER benefit to us is that we get to learn how other organizations operate," he said. Part of that benefit helped the Division decide how to fund its Econometric Model projct. Marcus has chaired several AUBER committees and served on the organization's board of directors. In 1988 AUBER's annual fall conference will be held in Indianapolis.

One of Marcus's enduring contributions to the Center is the level of publicity it has received since he became the research economist. Marcus has traveled to every one of Indiana's 92 counties and given presentations in almost all of them. Those presentations are frequently given extensive coverage in local papers, and he is just as frequently asked by various members of the state's media to comment on almost anything that affects the state's economy.

"Radio, TV, and newspaper people are much more sensitive to economic news now," Marcus said. "So a person in this position is going to receive many more calls from the press. Not that others have been retiring souls by any means, but I feel very much at ease doing that kind of thing. I see the advantages that are involved in giving good visibility to the organization, based on a solid record of credible research."

Many Things to Many People

The Bureau and the Division have been many things to many people. Bonser, who served both as a graduate assistant and as associate director, has fond memories.

"I think the Bureau and the Division have played an important role for the School, up until today," Wentworth said. "It plays a different role today than it did, and it will probably play a different role tomorrow, but that's as it should be."

"I think the Bureau was always a great training ground for people," Bonser said. "There were a lot of really good folks who passed through it over the years. It provided a way for them to get support to go to graduate school, but at the same time to have some real business-like experience."

Wentworth, as director of the Bureau and now as dean of the School, sees its importance in a different way.

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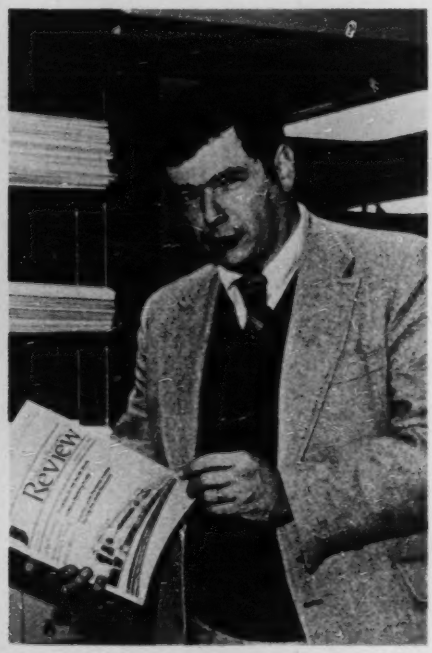
With the Division separated into two departments now, the roles probably will be different. It might be easier, however, for people to understand what those functions are.

"Few people have a real understanding of what we do," Marcus said before the Trustees acted to form two entities from one. "Within the organization people tend to see very narrow pieces of it. Outside the organization you get a very, very different view. We get phone calls. A woman called up and said, 'I've got a tree that seems to be dying. What should I do?' My response was, 'Call Purdue, and they'll send somebody out.' "

The Indiana Business Research Center staff may not get phone calls like that anymore, but it will continue the 60-year tradition of research to help Indiana's economy, and thereby to help all Indiana residents. □



Morton J. Marcus examines a copy of the *Indiana Business Review*.

Indiana's Gross State Product

Janet L. Fedde

Janet L. Fedde is a research assistant at the Indiana Business Research Center. Programmer for this project was Robert L. Plummer, and graphics were provided by Richard R. Brandt.

Estimates of Gross State Product (GSP) provide a useful basis for economic analysis and forecasting. Simply stated, GSP is a rough measure of the economic activity within a state; what GNP is at the national level, GSP is at the state level. This article provides information about Indiana's GSP for the years up to and including 1982. Previous *IBR* articles by Louis J. West[1] and Henry Fishkind[2] dealt with data from 1977 and earlier.

The method employed is consistent with previously published numbers and relies on the J. W. Kendrick and C. M. Jaycox value-added estimation technique. This method is used because value-added data are not always readily available at the state level and must be estimated. The state's share of personal income by sector times the value of output by share (which is its GNP) is used to derive a simplified measure of Gross State Product. The formula for all categories except farm and government output is:

$$GSP_{t,i} = GNP_{t,i} \times [IR(state)_{t,i}/IR(U.S.)_{t,i}]$$

where:

t = the year;

i = the industry sector;

GNP = gross national product, consisting of the sum of national income (NI), plus capital consumption allowances (CCA), plus indirect business taxes (IBT);

IR (state) = personal income at the state level; and

IR (national) = personal income at the national level.

The GSP value of the farm sector consists of the difference between the value of output and purchases such that Total Farm Output =

OUTPUT
Cash Receipts
plus *nonmoney income*
plus *net change in inventories*
PURCHASES
minus *expense for feed, livestock, and fertilizer*
minus *repairs and operation of equipment*
minus *net rent paid to nonoperator landlords*
minus *miscellaneous operating expense.*

The other formula needed to complete the GSP calculation is gross state government product. It is also based on a simple share calculation and is defined as the state's share of wage and salary disbursements times this sector's GNP.

$$\text{Govt. Output} = GNP_{ln} \times (WSD_{ls}/WSD_{ln}) + GNP_{fn} \times (WSD_{fs}/WSD_{fn})$$

where:

WSD = wage and salary disbursements;

l = local government;

n = national;

s = state;

f = federal government, both civilian and military.

Total GSP is then an aggregation of the individual formulas by industry.

Since 1960, Indiana's GSP of $13 billion has grown more than 380% to the current 1982 estimate of $63 billion. Until 1970, nominal GSP was increasing in excess of 30% every five years. After 1970, the GSP grew at better than 50% every five years. This is not surprising, given the increase in national inflation during this time.

Several tables and figures have been constructed to display GSP figures. **Table 1** reflects current (or nominal) dollars (in millions) of GSP for each industry sector and the total for the state. Since 1960, Indiana's GSP of $13 billion has grown more than 380% to the current 1982 estimate of $63 billion. Until 1970, nominal GSP was increasing in excess of 30% every five years. After 1970, the GSP grew at better than 50% every five years. This is not surprising, given the increase in national inflation dur-

(continued on page 18)

1. Louis J. West, "Indiana's Gross State Product," *Indiana Business Review*, February 1980: 9-11.

2. Henry H. Fishkind, "Indiana's Gross Domestic State Product, 1954-72," *Indiana Business Review*, July-August 1974: 1-5.

Table 1

Millions of Current (Nominal) Dollars of GSP by Industry

Sector	*1960*	*1965*	*1970*	*1974*	*1978*	*1979*	*1980*	*1981*	*1982*
Mining	171.0	164.8	197.0	346.2	565.5	781.1	1,008.4	1,170.4	1,211.9
Construction	568.2	861.2	1,221.9	1,607.9	2,527.8	2,830.4	2,685.7	2,589.6	2,539.1
Manufacturing	5,382.9	7,743.3	9,597.4	13,471.3	20,427.0	21,603.0	20,673.7	22,775.6	21,156.2
Finance, insurance, and real estate	1,517.1	2,025.6	2,801.4	3,923.4	5,936.9	6,592.0	7,085.6	7,530.9	7,983.6
Transportation, communication, and utilities	1,101.6	1,432.1	1,929.4	2,757.6	4,273.0	4,539.3	4,803.5	5,375.4	5,673.5
Services	920.8	1,294.4	2,065.3	3,015.2	4,701.6	5,138.4	5,858.4	6,497.0	7,153.5
Wholesale and retail	1,939.4	2,614.9	3,801.7	5,391.0	8,085.8	8,830.4	8,996.3	9,675.5	9,643.9
Government product	854.7	1,269.4	1,971.1	3,258.3	3,844.9	4,224.5	4,678.9	5,060.9	5,344.5
Farm	661.7	842.3	867.0	1,395.1	1,851.9	2,430.5	2,281.1	2,274.5	2,224.1
Other	18.9	25.6	40.5	58.1	84.9	93.0	103.3	115.4	128.7
Total	**13,136.8**	**18,274.0**	**24,493.2**	**35,224.5**	**52,299.7**	**57,063.0**	**58,175.3**	**63,065.7**	**63,059.6**

Detail may not add to total because of rounding.

Figure 1

Gross State Product for Indiana in Billions of Current (Nominal) Dollars

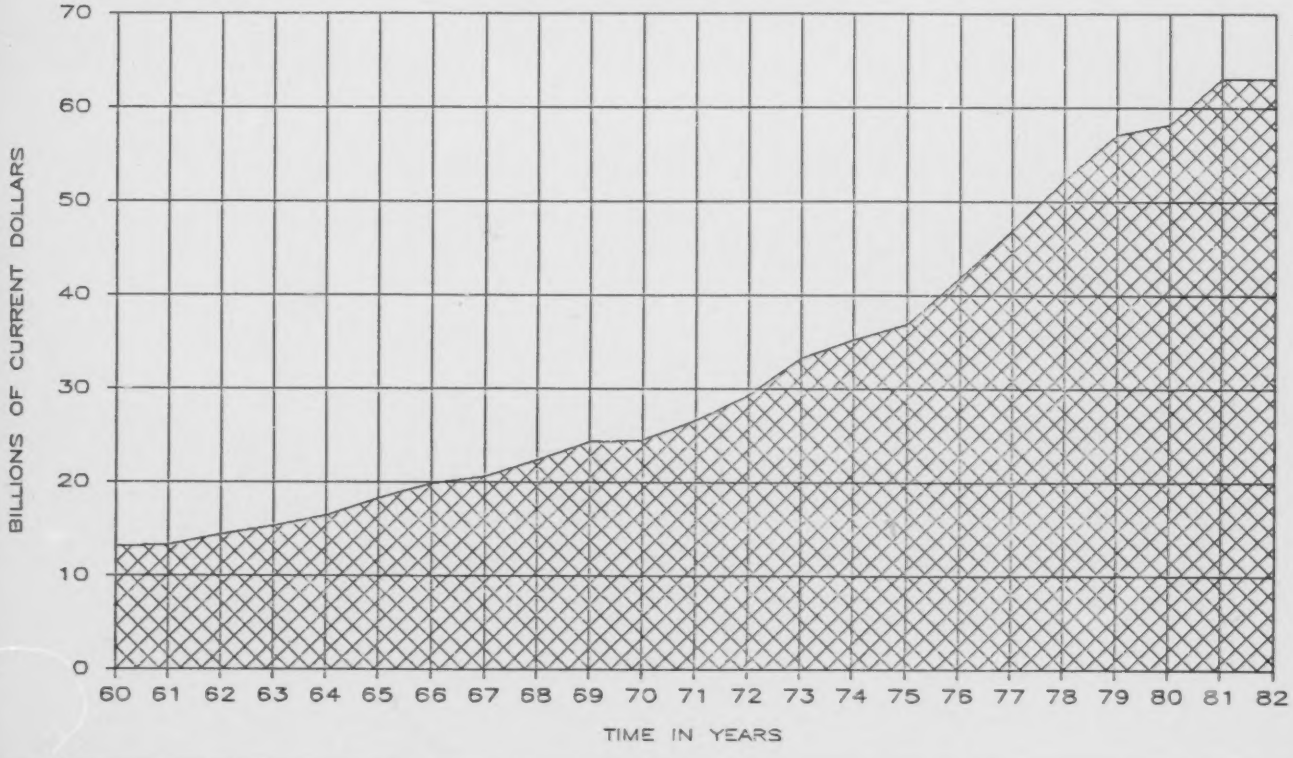


Table 2

Millions of Constant (1972) Dollars of GSP by Industry

Sector	*1960*	*1965*	*1970*	*1974*	*1978*	*1979*	*1980*	*1981*	*1982*
Mining	183.3	191.8	211.6	206.7	216.6	243.6	226.5	208.4	225.6
Construction	1,127.4	1,428.2	1,334.0	1,238.7	1,487.8	1,424.4	1,171.2	1,049.7	988.7
Manufacturing	6,431.2	9,273.4	9,935.2	12,325.1	14,048.8	14,073.6	12,476.6	12,766.6	11.271.3
Finance, insurance, and real estate	2,173.5	2,654.8	3,065.0	3,583.0	4,189.8	4,220.2	4,187.7	4,003.6	3,950.3
Transportation, communication, and utilities	1,380.5	1,738.0	2,136.7	2,511.5	2,977.7	3,032.3	2,890.2	2,927.8	2,817.0
Services	1,560.7	1,884.2	2,284.6	2,661.2	3,041.1	3,108.5	3,234.9	3,331.8	3,377.4
Wholesale and retail	2,635.1	3,387.2	4,023.0	4,576.4	5,489.3	5,484.7	5,126.1	5,113.9	4,878.0
Government product	1,723.3	2,115.7	2,310.8	2,875.8	2,585.7	2,632.1	2,696.8	2,666.4	2,612.2
Farm	957.5	1,145.9	1,045.8	928.8	1,050.4	1,160.6	1,180.0	1,139.5	1,169.3
Other	43.9	41.9	46.1	53.2	51.6	52.1	55.0	60.4	65.7
Total	**18,216.4**	**23,861.1**	**26,392.8**	**30,960.4**	**35,138.8**	**35,432.1**	**33,245.0**	**33,268.1**	**31,355.5**

Figure 2

Gross State Product for Indiana in Billions of Constant (1972) Dollars

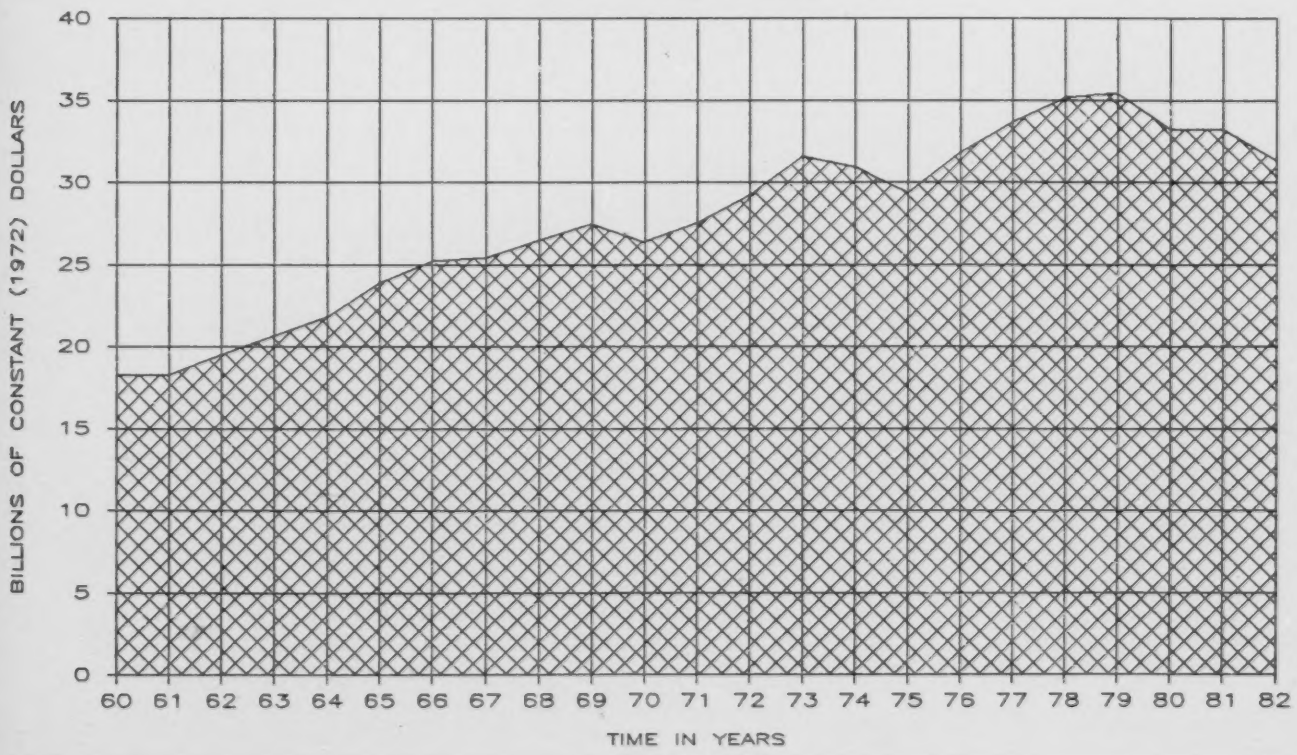


Table 3

Indiana Percent of U.S. GNP by Industry

Sector	*1960*	*1965*	*1970*	*1974*	*1978*	*1979*	*1980*	*1981*	*1982*
Mining	1.359	1.220	1.118	1.074	1.086	1.169	1.050	0.884	0.968
Construction	2.444	2.625	2.496	2.323	2.475	2.445	2.242	2.109	2.052
Manufacturing	3.742	3.916	3.805	3.954	3.938	3.835	3.555	3.539	3.355
Finance, insurance, and real estate	2.118	2.067	1.966	1.942	1.870	1.839	1.777	1.673	1.625
Transportation, communication, and utilities	2.403	2.365	2.252	2.244	2.210	2.165	2.071	2.058	2.021
Services	1.871	1.827	1.804	1.800	1.768	1.698	1.710	1.668	1.660
Wholesale and retail	2.303	2.322	2.282	2.232	2.231	2.199	2.098	2.040	1.969
Government product	1.810	1.877	1.700	2.008	1.677	1.702	1.714	1.690	1.649
Farm	3.279	3.847	3.363	2.922	3.152	3.395	3.370	2.814	2.962
Other	1.582	1.351	1.397	1.322	1.179	1.163	1.135	1.215	1.262
Total	**2.612**	**2.666**	**2.485**	**2.490**	**2.459**	**2.407**	**2.249**	**2.171**	**2.084**

Figure 3

Indiana's Percentage of Total U.S. GNP

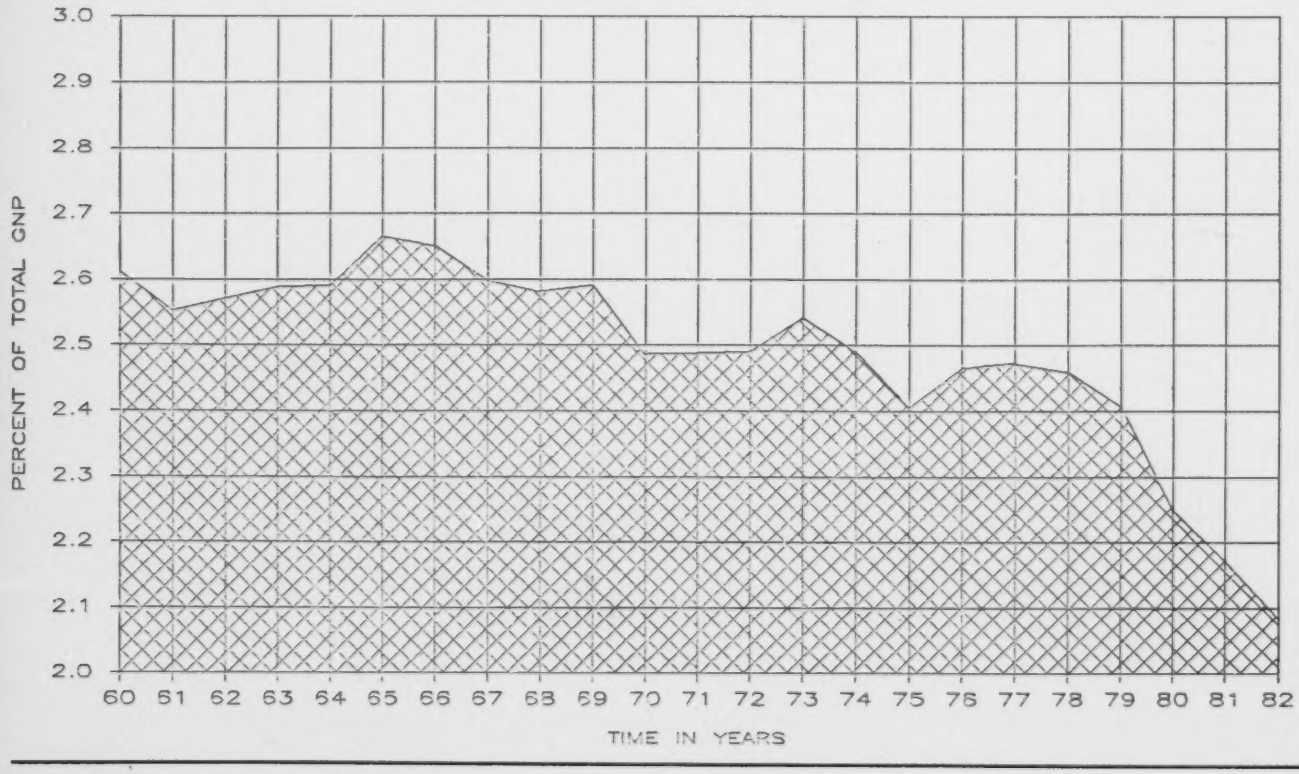


Table 4

Rate of Growth Using Constant Dollars

	1978	*1979*	*1980*	*1981*	*1982*
Mining	0.7	12.4	− 7.0	− 8.0	8.2
Construction	8.3	− 4.2	−17.8	−10.4	− 5.8
Manufacturing	4.5	0.2	−11.3	2.3	−11.7
Finance, insurance, and real estate	5.4	0.8	− 0.8	− 4.4	− 1.3
Transportation, communication, and utilities	5.9	1.8	− 4.7	1.3	− 3.8
Services	3.7	2.2	4.1	3.0	1.4
Wholesale and retail	6.6	− 0.1	− 6.5	− 0.2	− 4.6
Government product	3.1	1.8	2.5	− 1.1	− 2.0
Farm	−12.6	10.5	1.7	− 3.4	2.6
Other	10.0	1.1	5.5	10.0	8.6
Total	**4.0**	**0.2**	**− 6.6**	**− 0.1**	**− 5.4**

(continued from page 14)

ing this time. **Figure 1** shows Indiana's GSP from 1960 to 1982 in billions of current dollars.

Table 2 restates Table 1 in terms of constant 1972 dollars. It indicates a steady real growth in Indiana's economy from 1960 through 1979, with a slight downturn in the recession years of 1970-71 and 1974-75. Since 1979, Indiana's real GSP has fallen from $34.1 billion to $31.4 billion in 1982. This 13% decline is largely the result of a 31% decrease in construction and a 20% decrease in the manufacturing sector. **Figure 2** shows Indiana's GSP from 1960 to 1982 in terms of constant (1972) dollars.

Table 3 expresses each category as a percentage of its respective U.S. GNP category. **Figure 3** presents the same data in graphic form. Indiana's share of national GNP averaged between 2.5% and 2.6% from 1960 through the early 1970s. However, in 1970 the percentage decreased to 2.48%; in 1973 it rallied to 2.54%. In 1974 it again decreased to the 2.4% range, where it stayed until 1980. In 1980 it declined to 2.249%, in 1981 to 2.171%, and in 1982 to 2.084%. These declines indicate that Indiana's econ-

(continued on page 20)

Figure 4

Growth Rate of Indiana GSP Using Current Dollars

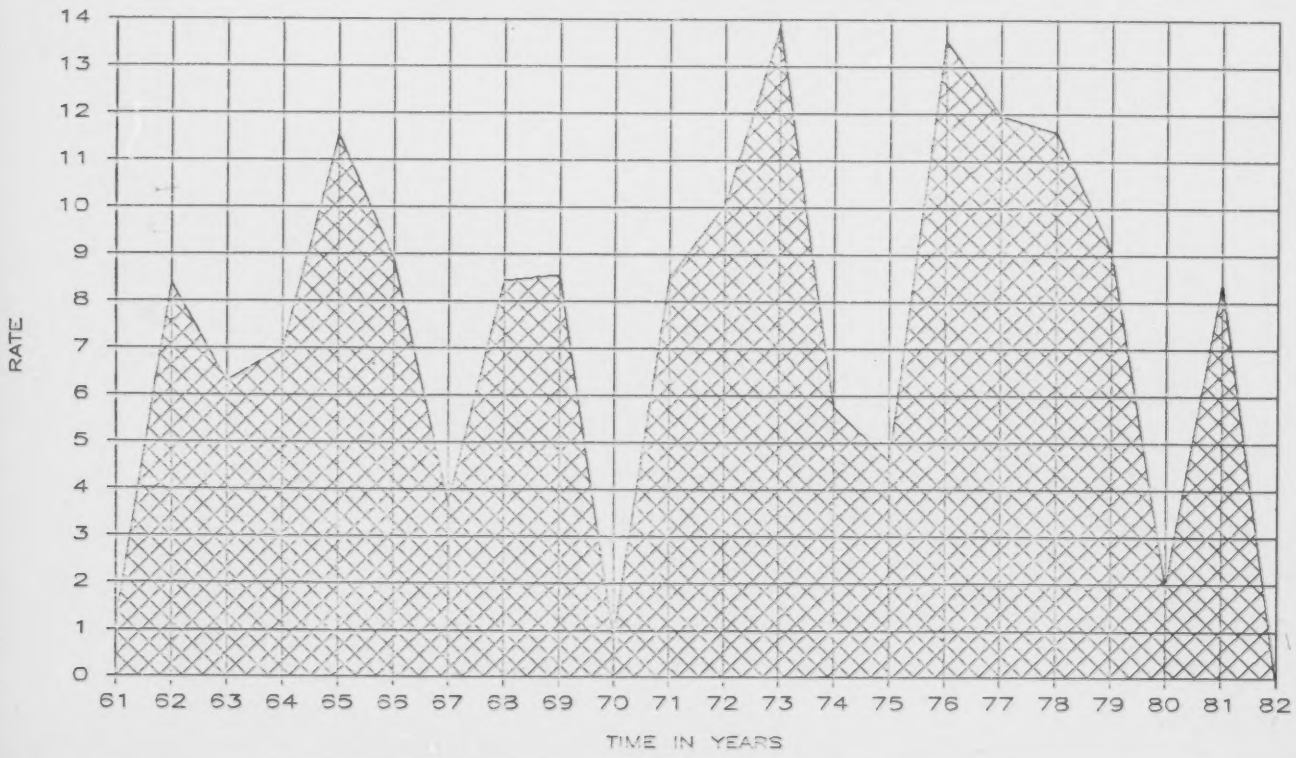


Table 5

Industry Share of Indiana Total

Sector	*1960*	*1965*	*1970*	*1974*	*1978*	*1979*	*1980*	*1981*	*1982*
Mining	1.3	0.9	0.8	1.0	1.1	1.4	1.7	1.9	1.9
Construction	4.3	4.7	5.0	4.6	4.8	5.0	4.6	4.1	4.0
Manufacturing	41.0	42.4	39.2	38.2	39.0	37.8	35.5	36.1	33.6
Finance, insurance, and real estate	11.6	11.1	11.4	11.1	11.3	11.5	12.2	12.0	12.7
Transportation, communication, and utilities	8.4	7.8	7.9	7.8	8.2	7.9	8.3	8.5	9.0
Services	7.0	7.1	8.4	8.6	9.0	9.0	10.1	10.3	11.3
Wholesale and retail	14.8	14.3	15.5	15.3	15.5	15.5	15.5	15.3	15.3
Government product	6.5	6.9	8.1	9.2	7.4	7.4	8.0	8.0	8.5
Farm	5.0	4.6	3.5	4.0	3.5	4.3	3.9	3.6	3.5
Other	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Figure 5

Percentage of Total Indiana Industry for 1982 by Industrial Sector

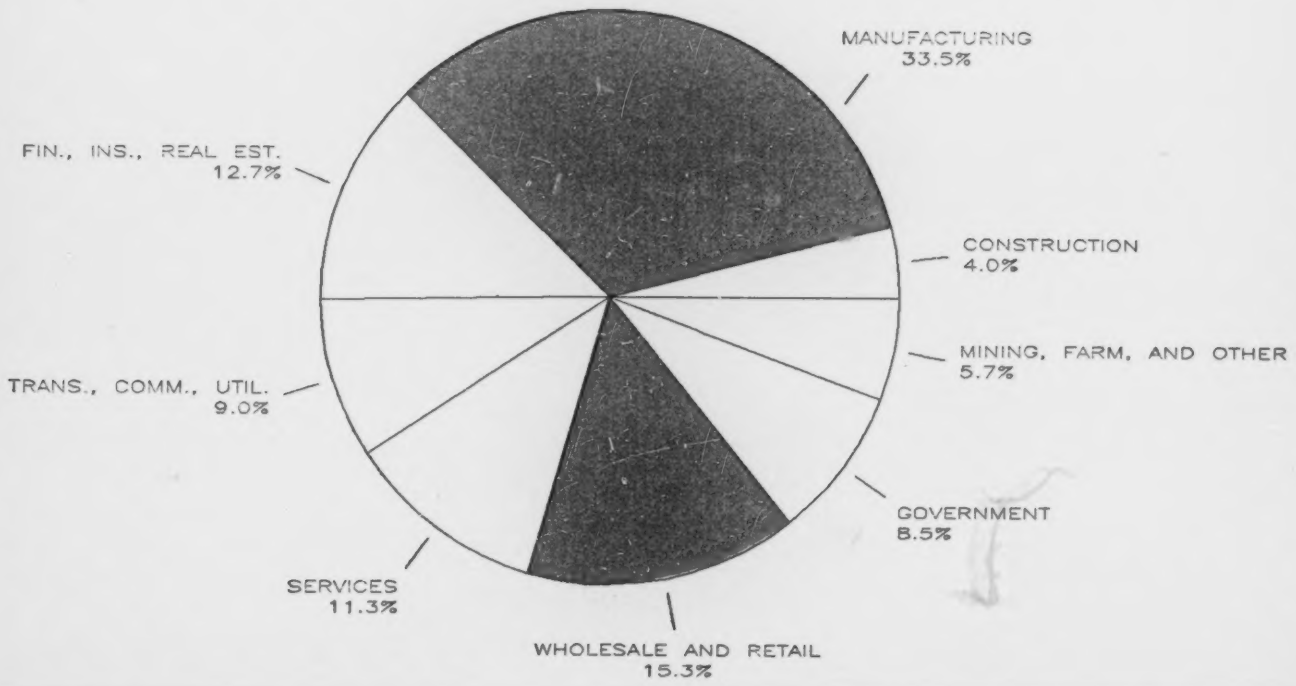


Table 6

Gross State Product by Industry:
Comparing the Bureau of Economic Analysis with the Indiana Business Research Center

The Bureau of Economic Analysis recently published experimental estimates of Gross State Product by Industry. The table below compares the Bureau's results with those of the Indiana Business Research Center. As this comparison shows, the figures are roughly comparable. The IBRC's number in the most recent year is within .4% of the Bureau's number.

	1963			1977		
	BEA	*IBRC*	*BEA/IBRC*	*BEA*	*IBRC*	*BEA/IBRC*
	(millions of dollars)			*(millions of dollars)*		
Mining[1]	117	180	.650	284	529	.537
Construction[2]	638	624	1.022	1961	2154	.916
Manufacturing	6744	6361	1.060	17842	18355	.972
Fin., ins., real estate	2036	1776	1.146	5558	5215	1.066
Trans., comm., util.	1361	1244	1.094	4235	3829	1.106
Services	1087	1098	.990	4178	4232	.987
Whole/retail	2251	2228	1.010	7294	7227	1.009
Govt. prod.	1143	1061	1.077	3793	3507	1.082
Farm	700	722	.970	1822	1733	1.051
Other	24	23	1.043	79	76	1.037
TOTAL	**16101**	**15317**	**1.051**	**47046**	**46857**	**1.004**

Total GSP for the two other reported BEA years

	1967	*1972*
BEA	21,363	29,755
IBRC	20,634	29,259
BEA/IBRC	1.035	1.017

1. Part of the difference in mining is that BEA deducts from value added capital account charges for exploration and development, exclusive of labor expenditures
2. Construction is adjusted by deducting the rent construction firms pay for machinery and equipment. BEA also goes through an adjustment process whereby it assigns value added in construction to the state in which the construction firm is established, which is not necessarily where the construction is performed.

(continued from page 18)

omy was more sensitive to recessions than was the national economy as a whole. The main contributors to Indiana's decreased share of the U.S. GNP are the declines in manufacturing and farm products.

Figure 4 expresses the rate of growth of Indiana GSP in current (nominal) dollars, while **Table 4** shows the percentage changes from 1978 to 1982 expressed in constant 1972 dollars. The negative growth years were consistent with the recession years of 1970, 1974-75, and 1980-82. The 1980-82 period is Indiana's longest period with no growth since 1960. Big losers during this period, as Table 2 indicates, were construction and manufacturing.

Table 5 exhibits each industry as a percentage of the total Indiana GSP. As **Figure 5** shows, manufacturing and wholesale and retail trade are the largest percentages and account for almost 49% of the total 1982 GSP. Since 1960, manufacturing as a percentage of the total has decreased by more than 7.4%, while the service sector has increased more than 4.3%. The farm sector showed only a 1.5% decline during the decade starting in 1960, but during the 1970s this category increased its share of Indiana's economy by 0.4%. This upturn was not sufficient, however, to offset the total loss for the period from 1960 to 1982 of 1.5%.

The Bureau of Economic Analysis recently published experimental estimates of GSP by industry. **Table 6** compares the BEA's results with the figures that we here at the IRBC have derived using the formulae described earlier. If the federal government continues its GSP estimating program, current and consistent data may be readily available from that source. □

Indiana Business Review

Indiana Business Research Center
Graduate School of Business
Indiana University
Bloomington, Indiana 47405

September-October 1985

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1925-1985

2/12/86 H2160-1

A publication of the
Indiana Business Research Center,
Indiana University School of Business

Indiana Business Review

Volume 60 **November/December 1985**

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Robert R. Jost — **Anderson-Muncie**

The Economic Outlook for 1986: Continued Slow Growth, But a Recession Is Unlikely

In this issue . . .

The Indiana University School of Business is pleased to present in these pages its annual Business Outlook. Each year a committee develops the Outlook for presentation throughout the state. Individual panelists have distinctive views based on a generally held belief about the direction of economic activity.

This year, under the chairmanship of Bruce Jaffee, the committee has had more structure without much more discipline. We believe that the following individual views blend together into a coherent economic forecast for 1986.

As in the past, we also offer the reports and observations of writers from throughout the state of Indiana. Each contributor enriches this publication by a different style and a different perspective.

For the good efforts of all we are deeply grateful. For the forecasts of each we are not responsible. For the continued well-being of our readers we remain ever hopeful.

M.J.M

Indiana Business Review

Published six times each year by the Indiana Business Research Center, Graduate School of Business, Indiana University.

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Morton J. Marcus, Director and Editor

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Unless otherwise noted, information appearing in the *Indiana Business Review* is derived from material obtained by the Indiana Business Research Center for instruction in the School of Business and for studies published by the Center. Subscriptions to the *Indiana Business Review* are available to Indiana residents without charge.

Bruce L. Jaffee

Associate Professor of Business Economics and Public Policy, Indiana University, Bloomington

The current economic recovery, which began in November 1982, has now celebrated its third anniversary. If growth continues throughout 1986, the current expansion will become the third longest of the eight post-World War II expansion periods. We believe that this outcome is likely, although growth will be moderate and mixed in the year ahead.

Constant dollar (real) GNP grew at a 6.8% rate in 1984, and it now appears that the growth rate for 1985 will be approximately 2.5%. In 1986 we expect that the growth rate will increase and fall into the moderate 3-4% range. Inflationary pressures are expected to increase in 1986 due to a weakening in the value of the dollar, rapid growth in the money supply, and continued expansion of the economy. Nonetheless, the inflation rate is likely to be in the 4-5% range for 1986, which is substantially below the average of the last ten years. If oil prices continue to decline, the inflation rate is likely to be at the low end of this range because of the important direct and indirect effect of energy on our price indexes.

Real consumer spending is expected to grow by about 3% in 1986, a rate approximately equal to the expected growth in personal income. In recent years spending growth has exceeded growth in personal income as the savings rate has declined and consumer credit has increased. However, in 1986 we expect the savings rate to rise from its current level, and we believe that the current personal debt burden will not retard spending growth.

Compared to its level in other business recoveries, the unemployment rate has remained high in this expansion. The rate should decline modestly in 1986 and be in the 6.5-7.0% range for most of the year. On the other hand, the employment rate is likely to remain near peace-time record levels, and labor productivity should increase markedly from its poor performance in 1985.

The preceding forecast represents the most likely course for the economy in 1986, according to the Business Outlook Panel. However, as suggested by the detailed sectoral reports that follow, there is considerable down-side risk in our forecasts. If monetary policy, fiscal policy, and the foreign sector do not perform as we predict, growth could be more modest than our expectations. □

Consumption Spending Outlook

Eugene A. Brady

Professor of Business Economics and Public Policy, Indiana University, Bloomington

Critical to any economic outlook is consumption spending, which amounts to about two-thirds of GNP. In large part, consumption spending is responsible for the fact that we recently have celebrated the third anniversary of the recovery. To date, we have had a steady expansion of consumption spending, and in the first half of 1985 consumption spending rose at an annual rate of 8.2% (nominal), even though a good portion of it was for goods produced abroad.

One of the biggest issues regarding future consumption spending is the impact of existing consumer installment credit outstanding. The consumer debt issue has been hotly debated in many financial publications. The most common measure of consumer debt is outstanding installment credit as a proportion of disposable personal income. This proportion recently hit a record high of debt amounting to 18.7% of income. Many economists feel that consumption spending must taper off as consumers start paying off their debt. However, consumers don't seem to be doing this. The latest savings figures indicate that consumers are saving about 2.5% of their incomes, the lowest fraction since the Government started keeping records in the postwar period.

Consumers are saving about 2.5% of their incomes, the lowest fraction since the Government started keeping records in the postwar period.

Those who are bearish on future consumption spending say the new peak in the debt-to-income ratio is higher than the last peak, which was reached in 1979, and we all know what happened between 1980 and 1983. They argue that the current record low savings rate, coupled with the record debt/income ratio, will force households to cut consumption and increase savings in the quarters ahead.

To measure consumer debt, the Federal Reserve takes all loans with finite maturities and adds to the principal unpaid amount of the loan all future interest payments, undiscounted. This calculation doesn't take into account the average maturity of the loans, and it is clear that the amortization period of consumer loans has lengthened considerably over the last few years. Automobile loans make up about 40% of total consumer indebtedness; the average auto loan has had its amortization period increased from something less than three years in 1980 to well over four years (51 months) for 1985. Although absolute debt has increased, the amount of loan *payments* to *income* is well below what it was in 1980. By this measure there is still a lot of borrowing slack for consumers.

Although absolute debt has increased, the amount of loan payments *to* income *is well below what it was in 1980. By this measure there is still a lot of borrowing slack for consumers.*

In a demographic sense, the proportion of big borrowers in the U.S. economy has been steadily growing since 1970. At the present time, a greater proportion of our population is in the 25-to-44 age bracket. As Nobel Prize-winner Franco Modigliani has shown, this age bracket is in the high borrowing category.

Delinquency rates are mixed. Mortgage delinquencies are up, while delinquencies for consumer installment credit are down.

Indices of consumer sentiment for 1984 and so far in 1985 are almost up to where they were in the golden mid-1960s. According to recent surveys, about two-thirds of consumers feel that the coming quarters will be good ones in which to purchase houses, cars, and durables. □

The Investment Outlook

R. Jeffery Green

Professor of Economics, Indiana University, Bloomington

Investment spending comprises (1) expenditures by firms for new plant and equipment, (2) expenditures for new housing (residential investment), and (3) investment in inventories. Each of these components has been a major contributor to the pattern of recovery since the end of 1982.

Plant and equipment spending in constant dollars grew at an average annual rate of 15.0% from the end of 1982 to the end of 1984. This growth was a major reason for the strength of the recovery in its first two years. From the end of 1984 to the third quarter of 1985 (the latest data available), plant and equipment spending rose at an annual rate of only 2.4%. Hence it contributed to the overall sluggish growth in the economy in early 1985.

Likewise, **residential investment** in constant dollars increased at an annual rate of 20.4% from the end of 1982 to the end of 1984, but it grew at only a 7.5% annual rate over the most recent three quarters.

Finally, **inventory investment** in constant dollars went from a decumulation of $24.6 billion at an annual rate in the final quarter of 1982 to an accumulation at a rate of $16.8 billion in the final quarter of 1984 before falling to near zero in the third quarter of 1985. Thus, all the components of investment spending contributed both to the sharp upturn in 1983-84 and to the subsequent sluggish period in 1985.

Why did investment spending slow in 1985? One major factor is the recent pattern of corporate profits. After falling dramatically in the last recession, profits rose strongly until the middle of 1984. Since then profits have been weak. In the third quarter of 1985 profits before tax in current dollars were 5.6% lower than in the second quarter of 1984. We expect the profits picture to brighten in 1986 as faster growth resumes. That expectation provides one reason for our investment spending forecast for 1986.

We expect **plant and equipment spending** in constant dollars to increase between 3 and 4% in 1986. This represents some acceleration in growth from 1985, and it reflects an improving profits picture and reasonably low interest rates. It also assumes no major tax reforms will be passed that will significantly diminish incentives for business investment spending. A new tax law featuring elimination of the investment tax credit and or reduction in depreciation allowances would produce a much weaker outlook for plant and equipment spending in 1986.

Residential investment spending is expected to rise 5 to 6% in 1986. This forecast reflects lower interest rates than in previous years; it also reflects the completion of a healthy level of 1985 housing starts. Starts of new housing in 1986 are predicted to rise about 5% from their 1985 level to about 1.85 million units.

Inventory accumulation is also expected to be higher in 1986 than in 1985. The economic slowdown in early 1985 caused firms to keep very lean inventories this year. But with growth picking up at least a little in 1986, firms will add to inventories.

When all these components are combined, investment spending in constant dollars in 1986 is forecast to grow by about 4%. Although hardly a boom, this would be a very good year. □

Monetary and Fiscal Policy Outlook

Lawrence S. Davidson

Associate Professor of Business Economics and Public Policy, Indiana University, Bloomington

Our 1986 national economic forecasts are dependent upon the specific policies of the government and the Federal Reserve System. But the way these policymaking institutions act in 1986 depends very much on economic conditions.

For example, our national economic forecast is based on slower money growth in 1986, whether measured as the yearly percentage change in M1 or M2. This deceleration from the torrid pace of money growth in 1985 depends very much on our forecast of moderate economic growth in 1986.

The deliberations of the Fed, though having minor effects in 1986, may well cause considerable havoc in 1987.

A 3-4% growth rate of real GNP in 1986 will give the Fed some breathing room to restore its credibility as an inflation fighter, particularly important after it let both M1 and M2 grow faster than targeted during most of 1985. If, however, the economy turns down or grows much more slowly in early 1986 than we have forecast, then the Fed may forgo the image upgrade and keep the monetary spigots open wide during the remainder of 1986. This response won't resuscitate the economy in early 1986, but it may stimulate growth later in the year.

Therefore, we think our 1986 economic forecast is compatible with either moderately slower or faster monetary growth. The deliberations of the Fed, though having minor effects in 1986, may well cause considerable havoc in 1987.

Our economic forecasts also assume that, in the areas of tax reform and deficit reduction, Washington is presently barking louder than it will bite. If any tax reform package passes both houses of Congress, either it will come too late to affect the economy in 1986, or it will be so watered down (compared to the original Treasury proposals I and II) that it will have little additional impact on the economy.

Our economic forecasts also assume that, in the areas of tax reform and deficit reduction, Washington is presently barking louder than it will bite.

As far as budget deficit miracles go, we also observe a lot of smoke but expect little fire. Current proposals to restrict Congress's power and to shave the Federal budget deficit will either fail altogether or be applicable to 1987 and beyond. At this writing the fiscal year 1986 appropriations remain unfinished business; there may be some action that will reduce the deficit below the $200 billion mark. Nevertheless, a 1986 budget deficit in the $200-$240 billion range is not likely to affect our forecast greatly. This $40 billion is small compared to a 1986 $4 trillion economy. Furthermore, the budget deficit often turns out to be quite different from the legislated year-ahead projection. Thus, even apparent budget progress today is no strong indication of economic change in 1986. □

Net Exports Outlook

Joseph C. Miller

Professor of Marketing, Indiana University, Bloomington

The 1985 controversies over international trade and the value of the dollar will continue into 1986. Since 1976, merchandise imports have exceeded exports, and in 1985 the trade deficit reached an all-time high. The two major concerns underlying the deficit are import competition and loss of export earnings.

With the surge in imports during the first half of 1985, protectionist pressures on the federal government became very strong. On September 22, the United States entered into an agreement with Japan, West Germany, France, and Britain to help defuse the potentially explosive situation and avert a trade war. The agreement set in motion dollar selling operations by the central banks, sales designed to gradually reduce the value of the dollar. If successful, the effect of these actions will be to ease the U.S. trade deficit by eventually stimulating exports and raising the prices of imported goods.

Our forecast is that the dollar will decline by 30-35% of its peak February 1985 value against the Japanese yen and West German mark before leveling out in the second quarter of 1986.

No one is sure, however, how much the dollar needs to be devalued or how long it will take to produce the desired effect on exports and imports. Our forecast is that the dollar will decline by 30-35% of its peak February 1985 value against the Japanese yen and West German mark before leveling out in the second quarter of 1986. Some prices of imported goods will begin to rise after the Christmas shopping season, but the prices of other imports may take longer to adjust.

The 1986 outlook for net exports foresees some improvement in the U.S. trade balance as imports decline and exports begin to rise.

The 1986 outlook for net exports foresees some improvement in the U.S. trade balance as imports decline and exports begin to rise. With a gradual decrease in the value of the dollar, the rise in the prices of imports should not cause serious inflationary pressures. Industries that have been hard hit by import competition will feel some relief as import prices rise. By the second half of 1986, exports will begin to strengthen and thus contribute to overall GNP growth. □

Outlook for Interest Rates

William L. Sartoris

Associate Professor of Finance, Indiana University, Bloomington

We are expecting interest rates during 1986 to be much less variable than they have been in the last few years. Although rates may drop somewhat during the first part of 1986, they should increase slightly during the latter part of the year. By the end of 1986, short-term interest rates should be about 50 basis points above their current levels. We expect this increase to be observed in both the money market rates, such as T-Bills, and in commercial bank loan rates. However, because the reduction in the prime rate has lagged behind the fall in money market rates, we might not see the full 50-basis-point increase in the prime rate. We expect less of a change in long-term interest rates than in short-term rates, with the long-term bond rates little changed from their current levels by year-end. Mortgage interest rates are expected to be little changed from current 1985 levels.

Economic Activity

Business credit demand has been slack for much of 1985. As the expansion continues, the business demand for credit will increase. This should put some upward pressure on interest rates. But because the economic expansion is expected to be moderate, this upward pressure on rates should also be moderate.

Federal Deficits

The federal deficit is likely to remain in the same range for 1986 as it has been for the last couple of years. A natural question is, **Why have interest rates declined over the last three years in the face of these extremely high deficits?** (To put the magnitude of the deficits over the last four years in perspective, the total amount of the federal debt has just about doubled, to almost $2 trillion, during the time that Ronald Reagan has been in office.) At least three reasons explain why we have not seen the relationship between interest rates and the deficit that many have expected.

1. The impact of the federal deficit on interest rates depends upon the health of the economy. There has been, and still is, a lot of slack in the economy. Federal deficits would be expected to push interest rates up only when the economy is operating at a high rate of capacity.

2. Because the value of the dollar has been so high, a large number of foreign dollars have been invested in the U.S. This supply of foreign money has helped to keep interest rates below what would have been necessary to finance the deficits domestically.

Adjusting for the inflation rate, today's interest rates are high by historic standards.

3. We should actually be focusing on "real" interest rates instead of "nominal" interest rates. The interest rates that are charged include a premium to cover the expected rate of inflation. To find the real borrowing cost—the cost after accounting for changes in the value of the dollars that will be used to repay the debt—we need to subtract the inflation rate from the nominal interest rate. The result is the "real" interest rate. From the period of the 1950s through the 1970s, we had real interest rates in the range of 1.5% to 3%. With current interest rates on T-Bills of 7.0% to 7.5% and an inflation rate of 3% to 3.5%, the real interest rate is now in the 4% to 4.5% range. What does that mean? It means that, adjusting for the inflation rate, today's interest rates are high by historic standards.

Value of the Dollar

Our outlook calls for a continued slow decline in the value of the dollar, a decline that affects interest rates in several ways. The decline in the value of the dollar makes investment in U.S. securities less attractive for foreign investors. A reduction in the supply of foreign money to be invested in the U.S. will place upward pressure on interest rates. A decline in the value of the dollar also causes imports to be more expensive. If domestic producers match the increase in the price of imports, the rate of inflation will increase. This increase will cause a rise in the level of interest rates, even if the real rate of interest remains the same. Because of the lag in the impact of changing currency values on the prices of imports, much of the decline in the value of the dollar since February 1985 has not yet worked its way through the economy. As these impacts are felt more fully, there will be upward pressure on interest rates.

Foreign Debt

The large amount of foreign debt and the questionable ability of some countries to repay it continue to cause a great deal of uncertainty to hang over the financial markets. Because most of the loans are denominated in dollars and many of the loans are tied to U.S. interest rates, the decline in the value of the dollar and the reduction in rates that is occurring will reduce some of the burden of this debt. □

Outlook for the Automotive Sector

Jack R. Wentworth

Dean of the Indiana University School of Business and Professor of Business Administration

The best term to characterize U.S. automobile sales in 1986 would be "softening." This forecast is based on annual sales of 10.2 million for 1986, about 6% less than the 1985 expected sales figure and 3% less than 1984, when 10.5 million cars were sold. These figures depend on the answers to two major questions:

1. To what extent have recent vigorous 1985 sales and healthy and successful incentive programs "stolen" 1986 sales?

2. What will be the domestic/import relationship for 1986 automobile sales?

Automobile manufacturers feared that a transport strike in August and September of 1985 would result in near-record stocks of 1985 models as the 1986 models came onto the market. As a result, a substantial (and, as it turned out, extremely effective) incentive program for most 1985 models was offered. The program, which centered on low interest rates (as low as 7.7%), resulted in a 13-year low in inventories in October. Many feel that the lure of low interest rates caused many potential 1986 buyers to move their purchases ahead to 1985.

Many feel that the lure of low interest rates caused many potential 1986 buyers to move their purchases ahead to 1985.

The second question deals with the mix of automobiles produced domestically with those imported from other parts of the world. In all probability, the number of imports will increase; if that happens, the domestic production decrease will be even greater than the decrease in sales. This scenario assumes that there will be no import restrictive legislation or that such legislation will not take effect until 1987. Any such legislation could have a depressing effect on automobile sales in general.

In all probability, the number of imports will increase; if that happens, the domestic production decrease will be even greater than the decrease in sales.

There is probably no industry that is becoming a world industry faster than the automobile industry. Indeed, it is extremely difficult to identify an "American" car. Which is more American: a Honda built in Ohio using many parts imported from Japan; a Chevrolet Nova (almost identical to the Toyota Corolla) built in California as part of the GM-Toyota joint venture; or a Plymouth Voyager Minivan built in Canada and containing an engine built by Mitsubishi in Japan? Within the next few years, it will get even more confusing. □

Sectoral Changes

Fred Bateman

Chairperson and Professor of Business Economics and Public Policy, Indiana University, Bloomington

The national shift toward increased service employment continues. Currently about 3% of U.S. work force is employed in agriculture, about 21% in manufacturing, and the remainder in non-goods production.

The figure for agriculture has remained roughly constant for several years, although the trend continues downward. The employment share in manufacturing has dropped substantially over the past decade and continues to diminish. Although recovery from the last recession brought many workers back into industrial plants, employment in such heavy manufacturing areas as steel and automobiles is not expected to return to former levels. For competitive reasons, American manufacturers will be forced to adopt new, capital-intensive techniques that will reduce the role of labor. It should be noted, however, that in manufacturing it is employment rather than output that is taking the downward adjustment. Assuming that domestic producers adjust to global market conditions and introduce new technologies, the level of production is not expected to show any precipitous decline in the near future.

Assuming that domestic producers adjust to global market conditions and introduce new technologies, the level of production is not expected to show any precipitous decline in the near future.

Relative to the rest of the nation, Indiana traditionally has had a larger share of its work force employed in manufacturing. That continues to be true today. Currently about 30% of the state's nonagricultural labor force works in manufacturing. Of that 30%, roughly three-quarters work in industries producing durable goods, those that have been most severely buffeted by foreign competition and most subject to increased substitution of capital for labor.

Indiana trends mirror the national ones. That is, manufacturing employment has declined over the past decade, from 36% in 1974 to approximately 30% ten years later. Industrial employment in the state thus remains proportionately well above that of the nation, despite the long-term trend downward over the past several years. It thus remains vulnerable to the forces that encourage capital substitution as the U.S. moves increasingly into the global economy. □

Real Estate Outlook

Jeffrey D. Fisher

Associate Professor of Finance and Real Estate, Indiana University, Bloomington

Housing

We forecast a slight increase in housing starts for 1986, which is what most economists, including those at F. W. Dodge and the National Association of Realtors, are saying. In September, the housing affordability index published by the National Association of Realtors was at its best level in more than six years. This level resulted from decreases in the median resale price of *existing* homes (now $75,300) and decreases in mortgage interest rates (12.07% for fixed rate mortgages).

Even with this improvement in home affordability, the median family income ($27,563 per year) is still short of the income necessary to qualify for an 80% loan on the median-priced house. Whether this gap will continue to narrow (as it has in recent months) or start to widen again is difficult to determine. Several sources of uncertainty affect the outlook for housing.

First, the average price of a *new* house rose 5% in September to $103,600. That increase moves the average back toward its record high of $104,700 last April. The price

of existing homes could rise again, which would reduce the affordability index unless interest rates keep falling or median incomes rise.

The price of existing homes could rise again, which would reduce the affordability index unless interest rates keep falling or median incomes rise.

Second, the recent proposals for tax reform are a major concern for real estate. In an attempt to produce a more neutral tax system, all the proposals attack real estate to various degrees. For example, the Reagan proposals would lower the top tax bracket to 35%, which would mean less tax on income but would also reduce the value of interest deductions on home mortgages. The proposals would also eliminate the property tax deduction. The National Association of Realtors predicts that, if this kind of tax law were enacted, it would result in a decrease in home values of 10 to 15%. The total decrease nationwide would be $300 billion, which represents 20% of the equity in homes.

Income property also would be affected by the tax proposals, primarily by the lower depreciation tax benefits. This would result in either the value of the property falling or rental rates increasing as investors attempt to earn the same rate of return as they were earning before the tax law change.

A third source of uncertainty is the tighter standards from mortgage lenders based on new regulations from the Federal National Mortgage Association. These regulations are a response to rising default rates on home mortgages. Almost one-quarter of 1% of home mortgages are currently in default. Mortgage balances rise over time with graduated payment and variable rate mortgages. With home values falling in some areas, borrowers who had high loan-to-value ratios have found their equity wiped out. Rather than keep paying on the loan, they are simply walking away. The new regulations are designed to combat this trend.

What can we conclude for housing activity? Forces are acting in both directions, and we are receiving mixed signals. Existing house prices are falling while new house prices are rising. On the average, house prices should barely keep up with inflation. Mortgage interest rates are falling slightly, but further gain is unlikely if our forecast is correct and long-term interest rates remain constant.

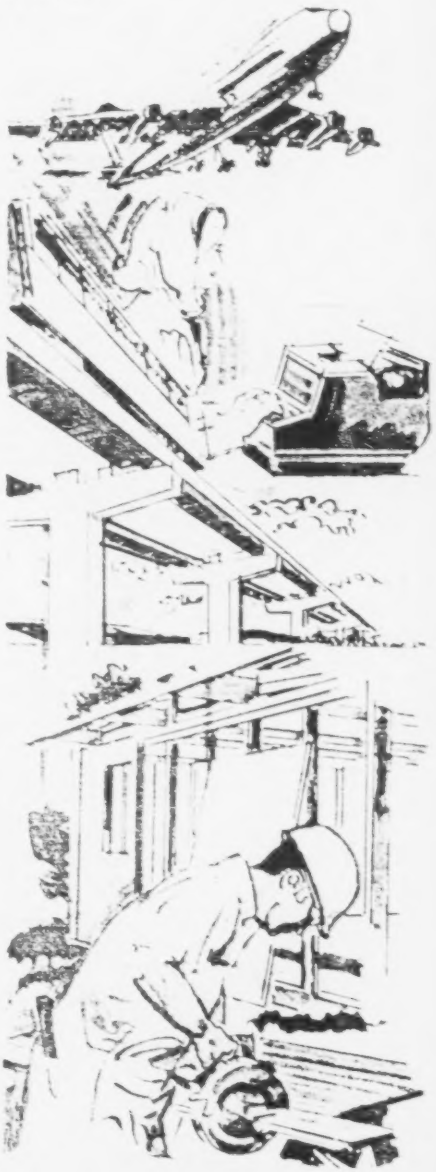
In general, lower inflation rates with lower increases in home prices, variable rate mortgages shifting interest rate risk to borrowers, and threats of tax reform have resulted in housing not being considered the investment it once was. This implies that more people are likely to consider renting as a less costly alternative to home ownership. Basic economic factors—such as demographics, affordability, and the strength of the regional economy—are becoming more important in the demand for housing.

Nonresidential Real Estate

Many economists believe that a current bias in the capital markets is resulting in overinvestment in nonresidential real estate, especially in hotels and office buildings. Consequently, vacancy rates have risen to very high levels. Sources of this bias include the following:

- Foreign investors like U.S. real estate because it seems physically and politically safer than investment elsewhere;
- Pension funds buy real estate to diversify their portfolios, particularly because real estate is thought of as a hedge against inflation;
- Syndicators buy real estate to get the tax benefits;
- Banks have found construction loans more profitable than other investment alternatives; and
- Savings and loan institutions have been willing to make risky real estate loans because federal deposit insurance reduces their risk.

How long can this overinvestment continue? Recent proposals for tax reform would eliminate some of the incentive for real estate investment. Due to high vacancy rates, rents may not be able to rise with future inflation. This could dispel the notion that real estate will continue to be an inflation hedge, which would reduce the demand from such institutional investors as pension funds. In general, the strength of local economies is likely to become *more* important in determining the demand for nonresidential real estate as tax benefits become *less* important and rental rates become *more* important in the investor's rate of return. □



Indiana's Economy in 1986: Not Great But Not Bad

Richard L. Pfister

Professor of Applied Urban Economics, Indiana University, Bloomington

We expect real personal income in Indiana to increase a little more than 3% in 1986, a percentage slightly greater than the 1985 increase. We expect establishment employment to grow by about 2% in 1986, less than the 3% increase in 1985.

Although at this writing not all figures are in for the final quarter of 1985, it appears that our forecast for 1985 (see *IBR*, November-December 1984) was a little high for personal income and a little low for establishment employment. Income from agriculture and from interest payments is lower than we had forecast. Employment in trade and services activities grew at a more rapid rate than we had expected.

All the employment growth expected in 1986 will occur in nonmanufacturing activities. As it did in 1985, the growth will occur mainly in trade and service activities. Nonmanufacturing employment is currently about 5% greater than it was in 1979, the peak year for total employment.

All the employment growth expected in 1986 will occur in nonmanufacturing activities.

Manufacturing employment will decline in 1986, though not greatly. Since its peak in 1979, manufacturing employment has declined every year except for 1984. The 1985 figure was 15% lower than it was in 1979. U.S. manufacturing employment has also declined since 1979 but only by about 8%. Indiana and the U.S. have plenty of company in the decline of manufacturing employment. Such declines—and some of them are relatively greater than in the U.S.—have been occurring in all industrialized countries except Japan, which has had a small increase.

Beginning in the first quarter of 1983, Indiana has experienced ten consecutive quarters of recovery. The accompanying **Table** shows the percentage increases for the ten quarters of the current recovery and for the comparable recovery period following the 1974-75 recession. Establishment employment grew by just over 13% in both recoveries. The relative growth in durable manufactures was twice as great in the earlier recovery. More of the employment growth in the current recovery is in trade and service activities, where wages are much lower and where more employment is part-time. As a result, growth in real personal income and in real wages and salaries is much weaker in the current recovery than it was in the 1975-77 recovery.

Comparison of Indiana's Ten Quarters of Recovery

1977:3/1975:1 and 1985:3/1983:1

Variable	*Percentage Change* 1977:3/1975:1	1985:3/1983:1
Real personal income	14.2	10.8
Real wages & salaries	15.0	12.0
Total establishment employ.	13.1	13.2
Nonmanufacturing	14.4	15.5
Manufacturing	11.7	7.6
Durables	11.9	5.9
Nondurables	11.2	12.4

Despite the relatively slow growth expected, 1986 still could be as good as any year since 1978, except for the very strong 1984. □

Indianapolis

Robert Kirk

Professor of Economics, Indiana University-Purdue University at Indianapolis, with data assistance from Ron Martin, Indiana Employment Security Division

The forecast for the Indianapolis metropolitan area economy is continued expansion, with a 2.5-3% growth in employment—a moderate expansion at approximately the same rate as 1985.

The leading sectors for the employment increase will be services and retailing, as they were in 1985. Manufacturing, an important sector in terms of wages and salaries, is not expected to be a source of employment growth in 1986.

The words from the song, "Hey, look me over, lend me your ear!" are appropriate for Indianapolis. When you look, you see new buildings; when you listen, you hear the sounds of activity. As a prime example, an estimated $190 million will be put into various construction projects on the IUPUI campus in 1986, including an addition to the Medical Sciences Building, the completion of the addition to Riley Children's Hospital, and the construction of a hotel-conference center and office building complex near the Indiana University Hospital. This construction activity is complemented by projects at other locations in the metropolitan area.

Demand for Office Space

Will all this new space be occupied? There is increasing concern about the downtown vacancy rates. The demand for office space is derived, in part, from employment growth in the services sector. A major contributor to this growth is business services—data processing, business consulting, and public relations, as well as janitorial services and temporary-help agencies. Perhaps this kind of employment should be classified as part of manufacturing because of the complementary relationships between the two. As manufacturing firms have sought to control their costs, they have contracted out business service functions to specialized firms that can take advantage of economies of scale because of the size of the local market. The new information technologies have also contributed to the growth of employment in business services. For several manufacturing firms, Indianapolis has been a branch-plant town with undeveloped business service functions. As Indianapolis has evolved into an important regional center, the business

service function has become more important.

Another major component of the services sector is health services. With the opening of the modernized Methodist Hospital and the expansion of Riley Hospital, a period of major hospital expansions will be ending. Although Riley Hospital will be adding up to 400 employees, major acute care hospitals will not be a source of employment growth. With cost control becoming the focus of attention, the health maintenance organizations (HMOs) have taken center stage as dynamic components in the health care delivery system.

Table 1
Housing Production in Selected Metropolitan Areas, 1980-84

Metropolitan area	*Housing permits, 1980-84, per 1,000 households in 1980*	*Multifamily permits, 1980-84 per 1,000 persons, 20-34 years old, in 1980*
INDIANAPOLIS	**67.4**	**49.6**
Columbus OH	70.8	40.1
St. Louis	68.0	38.4
Louisville	68.6	22.8
Cincinnati	50.0	29.2
Chicago	29.8	18.3
Detroit	26.7	15.0

Retailing and Manufacturing

Retailing is an example of a market structure in which there is extensive entry and exit of firms. In April, Borns Management is expected to open the renovated Union Station. With the inclusion of the Holiday Inn, which is a part of the project, about 1,000 jobs will be added to the Indianapolis employment base.

Because retailing occurs in a highly competitive environment, no doubt there will be some closings too.

Manufacturing in 1985 suffered some casualties. Four thousand jobs were lost, with much of the loss occurring in the electrical and nonelectrical machinery industries. The closing of Western Electric was a big factor, but the competitive environment nationally and internationally affected capital goods-producing firms generally. Although some individual manufacturing firms will increase their employment levels, no employment growth is expected from the manufacturing sector as a whole. In fact, if there are no net losses, 1986 will be a significant improvement over 1985.

A noteworthy event in 1985 was a turnaround in the assessed valuation in land and improvements for Center Township. In recent years, the assessed valuation had been decreasing for two reasons: property tax abatement and the removal of properties from the tax base because of demolitions and acquisitions by the city. Because the tax levy depends on the assessed valuation and the property tax rate, a falling assessed valuation places upward pressure on the rate. Thus, the turnaround is noteworthy.

Housing

Relatively speaking, as **Table 1** illustrates, housing construction in Indianapolis has been extensive since 1980. Table 1 shows the number of housing permits issued in the five-year period 1980-84, in relation to thousands of households in 1980 and to thousands of people in the 20-34 age bracket in 1980. To list only the number of permits issued would be to ignore differences in population. A better indicator of the health of the housing industry is permits issued for a constant number of households and for a constant number of people in a given age bracket.

Based on a Spring 1985 survey, the vacancy rate for single-family units was 2-3% and for multifamily units 8-9%, with de-

Table 2
Rankings of Percent Change in Employment for Selected Metropolitan Areas
2nd Quarter 1984-2nd Quarter 1985

Rank	*Total Employment*	*Manufacturing*	*Retailing*	*Finance, Insurance, Real Estate*	*Construction*	*Services*
1.	Columbus OH	Cincinnati	Columbus	Cincinnati	**INDIANAPOLIS**	**INDIANAPOLIS**
2.	Cincinnati	Detroit	Cincinnati	Columbus	Columbus	Columbus
3.	Detroit	St. Louis	Chicago	Detroit	Detroit	Cincinnati
4.	**INDIANAPOLIS**	Columbus	**INDIANAPOLIS**	Chicago	Cincinnati	Chicago
5.	Chicago	Chicago	Detroit	Louisville	Chicago	Detroit
6.	Louisville	Louisville	St. Louis	**INDIANAPOLIS**	Louisville	Louisville
7.	St. Louis	**INDIANAPOLIS**	Louisville	St. Louis	St. Louis	St. Louis

viations from the average based on location within the metropolitan area. These vacancy rates were comparable to those of the recent past.

As with construction in general, it is difficult to determine how much of the 1985 housing activity was motivated by proposed federal tax law changes.

It is anticipated that in 1986, 6,000-7,000 units will be constructed for the eight-county metropolitan area.

Relative Economic Performance

Table 2 is a scorecard of the past year's employment change for Indianapolis compared to some other Midwestern metropolitan areas.

Care must be exercised in interpreting these rankings. They are based on establishment employment rather than residential employment. The employment data will be revised at a later date. For manufacturing, income generated through wages and salaries may be a more important measure.

Although some individual manufacturing firms will increase their employment levels, no employment growth is expected from the manufacturing sector as a whole.

The range of employment change differs among sectors. For example, the range is very small in retailing. The range of change, both positive and negative, is larger in manufacturing. One large firm can make a difference in manufacturing, such as the closing of the Western Electric plant in Indianapolis. The level of sector aggregation may hide changes of different magnitude among subsectors, such as finance, insurance, and real estate.

The past is not necessarily a base from which to forecast the future. Decisions made in distant corporate boardrooms to locate a new plant in Indianapolis—or to close one—are not easily forecast. The rankings show that Indianapolis has been strong in construction and the services, although weak in manufacturing. □

Fort Wayne

Thomas L. Guthrie

Director of Community Research Institute and Associate Professor of Business Administration, Indiana University-Purdue University at Fort Wayne

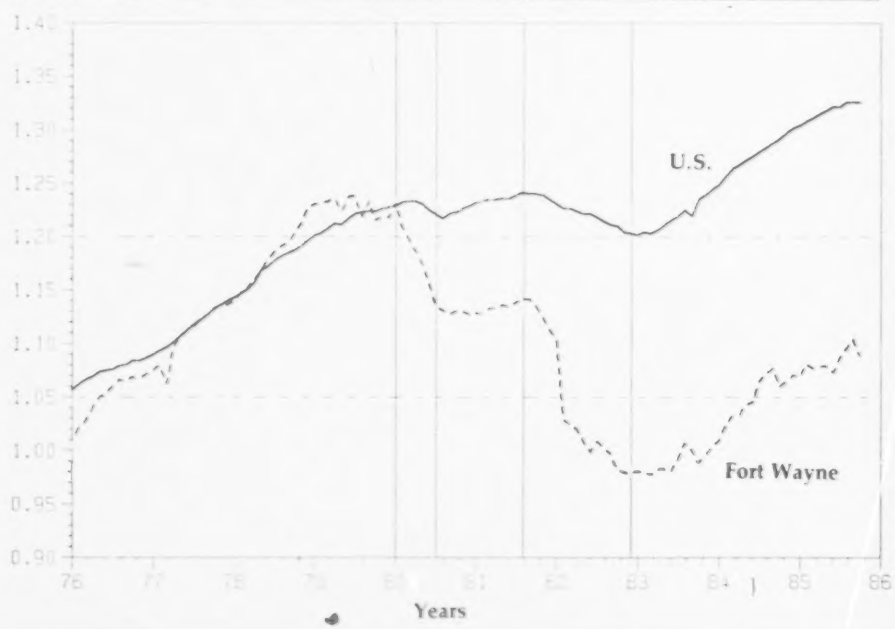
Employment in the Fort Wayne area—Allen, DeKalb, and Wells Counties—is forecast to increase approximately 4% in 1986. The actual job increase would be 6,600, based on preliminary estimates of current (1985 third quarter) nonagricultural payroll employment of approximately 165,000. Half of the employment gain is forecast to result from the continued cyclical expansion of the national economy (see p. 2), and the other half will come from area economic development, especially the start-up of the General Motors light-duty truck-assembly plant scheduled for the fall of 1986.

Realization of the 1986 forecast would mean that all except 3,400 of the approximately 30,000 jobs lost in the four years from 1979 through 1982 had been recouped in the intervening four years. Stated alternatively, for the four years from 1983 through 1986, area employment growth will have increased 20%. Although the area's recovery from the general malaise that has pervaded the Great Lakes states has been remarkable, a formidable task still remains if the area is to come even close to matching the net additions to employment experienced nationally during the same period (See **Figure**).

The 1985 forecast of a 2 to 3% increase in area employment appears to be on the

Total Wage and Salaried Employment, U.S. and Fort Wayne MSA

Index: 1972 Average = 1.00



mark. The actual increase is 2.4%, based on the preliminary estimated 1985 third-quarter employment of 165,000. Third-quarter employment a year ago was 161,100.

As has been the case nationally, area employment growth in 1985 has been concentrated in the nonmanufacturing sectors of the economy. In fact, manufacturing employment decreased nominally. Third-quarter 1985 employment was 46,200; that compares to 46,400 for the third quarter of 1984.

In 1986, the start-up of the new GM plant should increase manufacturing employment by at least 3,000. Given that the GM jobs are relatively high paying, the incremental demand for area services will be even greater than that normally associated with an increase of 3,000 jobs.

Burlington Northern, the second largest air-freight hauler in the nation, will be another new employer in the area in 1986. Freight from 150 cities nationwide is scheduled to be channeled through the hub. Although the planned employment of 300 is modest compared to GM, Burlington has the potential to rival GM in significance. Primarily because of Burlington, major improvements to the airport runways and hangars are under way. Even more significant would be approval of pending applications to establish a port of entry and a "free trade zone." This would open a whole new distribution dimension for the Fort Wayne area.

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Assuming area employment does increase in 1986 as forecast, questions concerning an adequate supply of labor are likely to arise. The fact that the area has yet to reach its previous cyclical peak in employment does not guarantee a readily available supply of labor. The Bureau of Census estimates that the population of the 13 northeastern Indiana counties decreased almost 4,000 (.6%) between April 1980 and July 1984. Actually, an estimated decrease of 9,500 between 1980 and 1983 was partially offset by an increase of 5,500 between July 1983 and July 1984.

Despite this recent increase in population, the Fort Wayne area unemployment rate has fallen from 10.5% in July 1983 to around 6% currently. Also, area help-wanted advertising continues to climb.

That Burlington Northern was literally swamped with applicants when it interviewed recently would appear to suggest the pool of available labor is still large. But does the available labor pool have the skills needed to fill many of the jobs being created in the area? Other indicators suggest not. □

Jeffersonville-New Albany (Louisville Area)

Fay Ross Greckel

Professor of Economics, Indiana University Southeast

The Louisville area economy continued to grow at a moderate rate during the second half of 1985. Some sectors that had been rather weak in 1984 were stronger this year, but a few others turned in a poorer performance this year than in the year before.

Employment

Total employment in the metropolitan area grew steadily, but slowly, in 1985. (The "official" metropolitan area, or MSA, was expanded this year to include seven counties rather than five: Clark, Floyd, and Harrison Counties in Indiana and Jefferson, Oldham, Bullitt, and Shelby Counties in Kentucky.) As **Table 1** shows, total employment in establishments located within the MSA grew by only 8,000 jobs from the first nine months of 1984 to the first nine months of 1985—half as many jobs as were added a year earlier. The slow employment growth means that the MSA is still more than 10,000 jobs below the prerecession employment peak attained in 1979.

Total employment in the metropolitan area grew steadily, but slowly, in 1985.

Manufacturing employment still lags. From 1983 to 1984, about 5,000 jobs in manufacturing industries were added to the local economy. But during the first three quarters of 1985, the manufacturing sector averaged 2,800 fewer jobs than in the same period of 1984, and that does not include the 900-job cutback announced by GE after the end of the third quarter. The job declines were concentrated in durables manufacturing, particularly the metals and machinery industries.

Nonmanufacturing employment was up by nearly 11,000 jobs in the first nine months of 1985 from the same period a year earlier. These job gains occurred throughout the nonmanufacturing sectors and were especially evident in retail trade, services, and government employment. A small fraction of the new service jobs replaced manufacturing sector jobs; some manufacturers decided to contract for services that previously had been provided by their own employees.

The three Indiana counties fared somewhat better than the metropolitan area as a whole. During the first nine months of 1985 there were about 1,300 more jobs in those counties than in the first nine months of 1984—about the same increase as occurred between 1983 and 1984. Job gains were also spread more evenly throughout the economy than in the Kentucky counties. About one-third of the new Indiana jobs were in manufacturing firms. Job growth was sufficient to bring total establishment employment to about 53,000—approximately equal to the previous employment peak, which occurred here in

1981 rather than 1979. Significantly, this previous peak was matched in both the manufacturing and nonmanufacturing sectors.

Unemployment data for the third quarter show a slight improvement over the year-earlier data. The Indiana Employment Security Division estimated that 6,500 residents of Clark, Floyd, and Harrison Counties were unemployed during the third quarter, the same number as in the third quarter of 1984. However, since the three-county labor force has expanded by nearly 6,000 residents, the estimated unemployment rate fell from 7.6% in third-quarter 1984 to 7.1% in third-quarter 1985. For the entire MSA, from third-quarter 1984 to third-quarter 1985 the Kentucky Cabinet for Human Resources estimated a small decline in both the number unemployed (down from 36,900 to 36,400) and the seven-county unemployment rate (down from 7.9% to 7.8%). (None of the above statistics are seasonally adjusted.)

Table 1

Louisville Area Employment and Unemployment in Thousands 1983-1985[1]

	Total Nonfarm Emplmnt.	*Mfg. Emplmnt.*	*Nonmfg. Emplmnt.*	*Number Unemployed*	*Unemplmnt. Rate*
Louisville Metropolitan Area[2]					
Annual averages					
1983	380.0	85.4	295.4	49.1	10.7%
1984	396.7	89.2	307.6	39.7	8.6
Quarterly averages					
1984:1	385.6	89.0	296.6	43.0	9.5
1984:2	396.4	88.8	307.1	40.1	8.7
1984:3	403.4	89.8	313.6	36.9	7.9
1984:4	401.6	89.1	312.5	38.7	8.3
1985:1	394.4	86.9	307.6	39.3	8.7
1985:2	405.2	86.4	318.8	34.4	7.5
1985:3	409.5	86.0	323.5	36.4	7.8
Clark, Floyd, and Harrison Counties					
Annual averages					
1983	49.9	11.7	38.2	8.8	10.5
1984	51.4	13.0	38.4	7.9	9.2
Quarterly averages					
1984:1	49.5	12.6	36.9	10.0	11.7
1984:2	51.9	12.5	38.7	8.4	9.7
1984:3	52.4	13.5	38.9	6.5	7.6
1984:4	52.6	13.4	39.2	6.7	7.8
1985:1	51.3	13.1	38.3	8.8	10.4
1985:2	53.2	13.2	39.0	7.0	7.9
1985:3	52.9	13.0	39.9	6.5	7.1

1. The employment data refer to establishments located within the area cited; the unemployment data refer to residents of the area. Data are not seasonally adjusted.
2. Includes Clark, Floyd, and Harrison Counties in Indiana and Jefferson, Oldham, Bullitt, and Shelby Counties in Kentucky.
Sources: Indiana Employment Security Division; Kentucky Cabinet for Human Resources.

The persistence of both unemployment and of significant pockets of poverty is evident in the record number of individuals qualifying for emergency food aid from Dare-To-Care, which has distribution centers on both sides of the Ohio River. Despite the overall employment gains, emergency food supplies for 60,150 persons were distributed during the first nine months of 1985, a 3% increase over the same period in 1984. (The 60,000 figure includes some repeat aid, possibly accounting for as much as 20% of the total.) The only good news about this statistic is that it represents a marked slowing of the rate of increase in emergency food aid requests.

Construction

Construction activity, which had picked up gradually in 1984, surged ahead in 1985, as can be seen in **Table 2.** In Jefferson County, residential building permits rose 27% in both dollar value and number of units, surpassing the 1979 record. An even greater growth occurred in nonresidential construction, which nearly doubled in value compared with 1984. During the first nine months of 1985 there was an 11% increase in the number of residential units for which building permits were issued in Clark County, and a 40% increase in Floyd County, with the difference attributable to apartment construction in Floyd.

Real Estate

Real estate sales fared less well. During the period from January to September 1985, real estate sales in Jefferson County were about 5% lower in total dollar value and about 10% fewer in number than in the first nine months of 1984. In southern Indiana, real estate sales for the first six months of 1985 were about the same as in 1984. However, preliminary data for the third quarter indicated that a strong sales increase was occurring in those months.

Sales

Automotive sales grew, but at a slower rate than in 1984, as **Table 3** demonstrates.

Table 2

Louisville Area
Residential Building Permits Issued, 1979-1985*

Period Covered	*Jefferson County, Ky.*	*Clark County, Ind.*	*Floyd County Ind.*
1979:Jan.-Sept.	1860	463	316
1982:Jan.-Sept.	670	111	200
1983:Jan.-Sept.	1766	185	259
1984:Jan.-Sept.	1649	193	166
1985:Jan.-Sept.	2102	215	232

*Number of residential units for which building permits were issued, including single-family dwellings, apartment units, and condominium units.

Source: Kentuckiana Regional Planning and Development Agency.

Automobile dealers in Jefferson County sold 4% more new cars and 16% more new light trucks from January to August 1985 than they did in the first eight months of 1984. During the same period, dealers in Clark and Floyd Counties saw new car sales rise by 10%, but their sales of light trucks rose only 4%.

The very limited data available on retail sales indicate that consumer spending remained sluggish during the first three quarters of 1985. According to the Dodge Report, department store sales in the Louisville MSA rose only 1.5% from the same months of the preceding year. Local merchants appeared to be guardedly optimistic about a surge in spending during the holiday season.

The Outlook for 1986

Moderate and uneven growth is likely to continue in the months ahead. Real estate sales appeared to be gaining strength during the third quarter of 1985. After the usual winter lull, growth should persist in 1986 because interest rates are expected to remain at their present levels or to decline slightly.

Residential and nonresidential construction should continue to be strong in 1986, particularly in Jefferson County. Several large projects—mainly office towers and apartments/condominiums—will be underway in downtown Louisville, with other projects under construction in suburban areas. Although there is growing concern about over-building office facilities, the current expansion of downtown office space was accompanied by a decline in the vacancy rate from 16% to 13.6%.

Another cause for optimism is a report from the Louisville Area Chamber of Commerce that commitments from new and expanding industries are running well ahead of last year, both in projected spending on plant and equipment and in number of new jobs to be created.

The picture is not entirely rosy. There is greater vulnerability in many sectors than in previous expansion periods. Problem areas include agriculture and related industries; exporting and import-competing businesses; firms in various industries that are hanging on, but rather precariously; and businesses that are having trouble adjusting to a world in which virtually stable prices make it difficult to pass on cost increases. Some retailing and service industries, including restaurants, are still seeing the effects of the slow recovery, the loss of high-paying manufacturing jobs, and the other weaknesses noted above.

Nevertheless, for the time being, the strengths appear to outweigh the weaknesses. Employment should increase as much—and perhaps a little more—in 1986 as in 1985, bringing the total number of jobs in the MSA close to the prerecession peak. Unemployment will continue to decline, and the economy as a whole will experience moderate growth, as it did in this past year. □

Table 3

Louisville Area New Car and Light Truck Sales, 1983-85

	Jefferson County, Ky.		*Clark and Floyd Counties, Ind.*	
Period Covered	*Number of Vehicles*	*% Change*	*Number of Vehicles*	*% Change*
1983:Jan.-Aug.	22,058	—	4,019	—
1984:Jan.-Aug.	25,951	+ 17.6%	5,615	+ 39.7%
1985:Jan.-Aug.	27,638	+ 6.5%	6,088	+ 8.4%

Source: Greater Louisville Automobile Dealers Association.

Terre Haute

Marvin Fischbaum

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A year ago the economic outlook for Terre Haute appeared to be troubled and uncertain. With the national economy decelerating, this area showed signs of stalling out. Manufacturing jobs lost between 1979 and 1982 simply had not been replaced. Much of the remaining manufacturing base depended on a depressed agricultural sector, and employment growth in locally dependent service sectors appeared to be limited. Indeed, the last quarter of 1984 saw employment decline by more than the seasonal norm, and by January 1985 area employment had fallen to its lowest level since February 1983.

If the numbers are to be trusted, area employment has advanced remarkably since

the beginning of the year. Estimated employment for the old four-county SMSA peaked at 78,185 in June 1979. By August 1982 it had fallen to 65,690, and as late as January 1985 it stood at 69,700. The preliminary estimate for September, however, is a robust 78,520. The 13% increase in jobs over the first three quarters of 1985 substantially exceeded the rate of job loss for any similar period of the 1979-1982 recession. By September, the unadjusted unemployment rate, both for Vigo County and the Terre Haute MSA, had fallen to 6.1%. Even the seasonally adjusted rate of 6.8% stood below state and national averages.

But Terre Haute does not present the atmosphere of a city riding the wave of prosperity. The uncertainties of a year ago have not been resolved, and new developments have, on balance, tended toward the negative. Plans to tear down the old Meis Department Store and build offices for the water company fell victim to the cost of removing asbestos from the old structure. Schultz, the last of the downtown department stores, is closing its doors. Terre Haute Malleable, once a major employer of a skilled work force, fell victim to weakness in farm equipment manufacturing and to foreign competition. In Brazil, the Glen Gery Brick Company, a remnant of an industry once synonymous with Clay County, is nearing the end of the line.

But Terre Haute does not present the atmosphere of a city riding the wave of prosperity. The uncertainties of a year ago have not been resolved, and new developments have, on balance, tended toward the negative.

Perhaps the most significant development of 1985 resulted from the takeover battle at CBS that led to a stock buyback and a desire to generate cash rather than invest. Demand for compact audio discs has been growing more rapidly than almost anyone envisioned, which strained the CBS-Sony partnership in DADCO. Sony, wishing to redouble the capacity of the only digital audio disc facility in the U.S., bought out the CBS interest. At the same time, Sony shelved plans to construct a separate plant for digital video discs. In the short run, disc production will increase more rapidly without a CBS veto on expansion, but the long-run potential of the local facility would have been greater with the continued participation of the largest producer of audio records and tapes.

Generally, business conditions in 1985 appeared to be fairly good, if not as ebullient as employment data would indicate. An informal survey of retailers suggests sales growth modestly in excess of inflation.

Generally, business conditions in 1985 appeared to be fairly good, if not as ebullient as employment data would indicate. An informal survey of retailers suggests sales growth modestly in excess of inflation. A similar survey of manufacturers suggests a large volume of orders and an improvement in the number of hours worked, though not in the number of workers employed. For 1986 these manufacturers anticipate increased spending on capital equipment, but again, no increase in employment.

Construction activity increased in 1985, but unemployment in the construction trades remained exceedingly high. F. W. Dodge estimates that the first eight months of 1985 brought a 10% increase in the value of residential construction contracts and a 35% increase in nonresidential contracts. On a cumulative twelve-month basis, the value of building permits in Vigo County remained steady for residential construction, while nonresidential permits multiplied on a very small base. In 1985, the focus of residential construction shifted from homes to apartments. Real estate activity picked up in 1985, but home prices were stable, and with declining interest rates, ownership costs fell.

For 1986, a further pickup in construction activity is likely. Nonresidential projects announced but not yet started include buildings at Indiana State University and Rose Hulman, at least one downtown office building, and a couple of strip shopping centers. Residential construction includes three separate proposals for middle-income housing for the elderly and possibly one new nursing home.

Terre Haute has been suffering from an astonishing case of Toyota fever. Local media have encouraged citizen participation in an effort to land the choicest prize in the Japanese auto plant lottery. This follows a flap in which the city berated the state for omitting Terre Haute from its list of potential sites, and the state berated the city for airing its differences publicly and for not coordinating efforts with the state. The city claims that the state does not treat Terre Haute fairly, while the state claims that Terre Haute hurts the chances of other Indiana sites by pursuing an independent course. Both are probably right.

Terre Haute enjoyed substantial employment gains in 1985, but nothing developed to repair the declining export base. Long-term questions regarding the economic health of the region remain, and for 1986 the local economy must overcome obstacles simply to remain even.

South Bend-Elkhart

John E. Peck

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The midyear outlook for the South Bend and Elkhart areas (*IBR*, May-June 1985) suggested that economic conditions over the remainder of 1985 should be relatively flat. In light of the decidedly sluggish performance of the national economy—particularly in manufacturing—and the absence of either positive or negative shocks locally, the local record appears to match the earlier forecast. However, it can be argued that

some progress has been made locally and that the present sluggishness is not a prelude to an imminent downturn.

The **Table** summarizes various indicators of local economic activity for the South Bend/Mishawaka and Elkhart/Goshen communities as tracked by Indiana University at South Bend's Bureau of Business and Economic Research. The figures contained in the table are seasonally adjusted and, with the exception of the unemployment rates and real estate data, are index numbers expressed as a percentage of 1967 base year values. In each table, comparative index numbers are given for July and August 1985. To highlight trends, index numbers are also given for an August 1985 to August 1984 comparison.

South Bend

Looking at the short-term South Bend-Mishawaka performance, we see that:

- Employment was up fractionally;
- The unemployment rate was down by seven-tenths of a percentage point, due almost entirely to a late summer post-vacation recall of workers in the transportation equipment sector;
- Industrial energy sales and truck purchases were down; and
- Housing permits and passenger car sales were up.

Selected Economic Indicators for South Bend/Mishawaka and Elkhart/Goshen
(Seasonally Adjusted Indexes: 1967 = 100)

	South Bend/Mishawaka					*Elkhart/Goshen*				
				% Change from					*% Change from*	
	August 1985	*July 1985*	*August 1984*	*July 1985*	*August 1984*	*August 1985*	*July 1985*	*August 1984*	*July 1985*	*August 1984*
Employment data										
Establishment employment										
Nonag. employ.	116.9	116.7	114.9	.2%	1.7%	170.7	168.9	168.9	1.1%	1.1%
Mfg. employ.	77.7	77.6	78.4	.1%	- .9%	156.9	154.7	158.1	1.4%	- .8%
Nonmfg. employ.	139.3	138.9	135.6	.3%	2.7%	306.5	304.7	297.0	.6%	3.2%
Unemployment rate	6.4	7.1	6.3	n/app	n/app	5.9	6.6	6.0	n/app	n/app
Help wanted advertising	98.8	104.9	81.5	- 5.8%	21.2%	—	—	—	—	—
Utilities										
Industrial electricity sales	154.6	154.7	135.7	- .1%	13.9%	199.8	200.7	192.3	- .4%	3.9%
Commercial gas sales	134.6	66.6	144.8	102.1%	- 7.0%	161.2	180.9	157.3	-10.9%	2.5%
Industrial gas sales	56.9	67.0	77.3	-15.1%	-26.4%	233.9	242.6	285.5	- 3.6%	-18.1%
Retail car & truck sales										
New passenger car sales	95.9	92.6	95.0	3.6%	.9%	—	—	—	—	—
New truck sales	237.5	306.3	193.4	-22.5%	22.8%	—	—	—	—	—
Housing construction data*										
Est. value of permits	469.4	378.1	289.5	24.1%	62.1%	311.9	455.4	216.2	-31.5%	44.3%
No. of permits issued	116.3	98.7	76.9	17.8%	51.2%	102.2	169.7	72.7	-39.8%	40.6%
Av. value per permit	440.4	415.1	403.9	6.1%	9.0%	324.2	281.8	321.0	15.0%	1.0%
Residential real estate data**										
No. of active listings	1754	1672	1533	4.9%	14.4%	1288	1283	1361	.4%	- 5.4%
Closed sales:										
Av. days listed	59	53	87	11.3%	-32.2%	101	95	112	6.3%	- 9.8%
Av. market price	$50,258	$49,256	$48,276	2.0%	4.1%	$49,269	$48,890	$48,631	.8%	1.3%
% of sale to list price	94.0	94.0	94.0	.0%	.0%	95.0	103.0	95.0	- 7.8%	.0%

* All Elkhart construction data has a base year of 1970.
** Real estate data are not index numbers but are unadjusted weekly averages.
Sources and definitions of data are available on request.

The 12-month comparison suggests that the August 1985 performance was, in many ways, a continuation of a longer-term pattern. The year-to-year unemployment rates and car sales indexes were virtually unchanged. A 2.7% increase in nonmanufacturing employment was offset by a .9% decline in manufacturing employment. Despite this reduction in manufacturing employment, 2,500 more persons are employed in manufacturing in the South Bend-Mishawaka MSA than in August 1983, when the economy still labored under the burden of recession.

The most impressive performance seems to be in housing. Permits issued were up 51.2% on the year-to-year comparison, and the average days listed for residential real estate had declined by one-third.

Elkhart

Conditions in the Elkhart-Goshen MSA were equally flat whether viewed from the short-term or longer-term perspective. On the August 1984 to August 1985 comparison, employment indicators were up on moderate increases in durable goods manufacturing and retail trade. All energy sales indicators were down.

Although housing permits issued declined 39.8%, they remained at a level that reflects very acceptable activity over the summer of 1985. The number of active real estate listings remained virtually constant, and the average number of days that residential properties were listed rose 6.3%.

The Elkhart-Goshen community was one of the first in the state to recover from the 1982-83 recession. Prerecession employment levels had been recovered by late summer 1983. More remarkably, the economy continued its surge of growth in the months to follow, adding nearly 12,000 new jobs through August 1985. A comparison of August 1984 and August 1985 indicators reveals that the intensity of this growth moderated over the past year.

Employment overall was up a modest 1.1%, yet the total number of persons employed in the county reached historic highs (90,000+) by June 1985. The other indicator certainly worth mentioning with respect to its year-to-year performance is the number of building permits issued, which in August 1985 was up 40.6% from August 1984. The summer months of 1985 were particularly good in this regard for the Elkhart-Goshen MSA.

Employment levels should continue to rise through 1986 at a 1-2% rate, with some additional improvement in the Elkhart community in the last half of the year.

Most forecasters see the coming year as one of moderate growth, with the nation's GNP increasing by 3 to 4% after adjustment for price changes. Such a scenario—without unexpected local shocks—suggests a continuation in the local economies of the modest improvements that we have realized over the past 12 months. Accordingly, it is expected that employment levels should continue to rise through 1986 at a 1-2% rate, with some additional improvement in the Elkhart community in the last half of the year. □

Kokomo

Dilip Pendse

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Kokomo's economy registered a sharp and vigorous growth during the first nine months of 1985, thanks to a healthy boost in the auto sector, low interest rates, low inflation, and a low jobless rate. The economy that was in utter distress three years ago is now healthy, more diversified, and poised for another year of solid growth. Not only are more people working now than any time in the past 10 years, but people are also more optimistic about the future than in the recent past.

Employment

On the average, 43,122 people per month were in Kokomo's labor force during the first three quarters of 1985, the highest number in the past 10 years and up 8% from the same period in 1984. The swelling of the labor force is a strong indication that people are migrating to Kokomo for jobs and that those who were discouraged in the past are reentering the labor force. Of course, people wouldn't come to Kokomo if jobs were hard to find.

During the first nine months of 1985, on the average, 39,933 people per month held jobs in the area, the highest monthly average in the past 10 years, and up 2,433 from the same period a year ago. The average monthly unemployment rate during January-September 1985 stood at 7.4%, down from 7.6% during the same period in 1984. The dramatic turnaround on the employment front can be attributed to such factors as a healthy economy, higher factory recalls, and creation of new jobs.

Incomes

Because more people are working, the average per capita and per household incomes have risen sharply in Kokomo. According to the Bureau of Labor Statistics, in 1984 the average annual pay per worker in Kokomo was $22,861, the highest in the state and the fiftn highest in the nation. Since 1982, Kokomo has moved up 32 places in the Bureau of Labor's national rankings. The average annual pay per worker is expected to rise to $24,461 in 1985.

And there's more good news. For the second consecutive year Kokomo has moved up sharply in the *Sales and Marketing Management*'s ranking of metropolitan areas. For example, 1984's median household effective buying income in Kokomo ($28,789) was ranked the highest in the state and eightieth in the nation. Since 1982 Kokomo has moved up 97 places at the national level and five places at the state level. Kokomo's national ranking has registered the most

rapid and sharpest improvement among the eleven metropolitan areas in the state. For the year 1985, the median household effective buying income should rise to $33,107.

Not only are more people working now than any time in the past 10 years, but people are also more optimistic about the future than in the recent past.

Capital Expenditure

Another bright spot, along with lower jobless rates and higher incomes, are plans to expand and modernize existing operations. Capital expenditure plans totalling nearly $1 billion have been announced by GM, Chrysler, Tau Lab, Kokomo Sanitary Pottery, and Indiana Bell, to name just a few.

General Motors alone plans to spend $575 million to enlarge and refurbish its Marion metal stamping plant, which employs 3,700 people. Similarly, Chrysler Corporation is to expand and renovate Kokomo's casting and transmission plants at a cost of $375 million.

These and many other major capital expenditure plans will mean not only greater security for existing jobs but also more jobs in the future. They also will make the area more attractive to other industries.

Housing

Another sector that performed exceptionally well during the first nine months of 1985 is the housing sector. It blossomed in Kokomo, registering significant gains in almost all categories.

The number of houses sold during the first nine months of 1985 was 22% higher than a year ago. The number of building permits issued for various projects jumped 20%, thanks to a resurgence in single-family home and office/business construction. One hundred twenty-one single-family home construction permits were issued from January to September of 1985, up a whopping 83% from a year ago. The building permits issued for office/business construction/renovation registered a hefty 40% gain during the first nine months of 1985.

Retail Sales

Kokomo's retail businesses have benefited from healthy economic conditions. A year ago, Kokomo's retail businesses rang up total sales of $586.7 million. This year, the volume of retail business is expected to rise to $674.1 million. Sales have been especially strong at general merchandise stores, auto dealers, eating and drinking establishments, and furniture and appliance stores.

The Outlook for 1986

Kokomo's economy, largely influenced by trends in the durable goods sector of the national economy, should continue to do well in 1986, though not with the same vigor registered in 1985. Some uncertainty, of course, exists in this forecast because of yet unknown ramifications of the recent filing of bankruptcy papers (the second time in the past five years) by Continental Steel Corporation, Kokomo's fourth largest employer, and Cabot Corporation's decision to sell its operations in Kokomo.

The local economy will not generate enough jobs to keep unemployment from rising. On the average, 200-300 fewer people per month will be working next year, with monthly unemployment rates ranging between 7% and 11%. No massive layoffs are expected in the auto sector, and the odds are heavily against unemployment rates rising to the teens.

Consumer spending will continue next year at a cautious pace, helping the retail trade to rise to $755 million. Sales of durable goods, however, will slow down. The backlog of demand for new automobiles has eased quite a bit, and auto sales will decline next year.

The prospects for the housing sector look good, although not necessarily great. Nearly 50% of housing sales in 1986 will be financed through conventional loans, thanks to the prospects of steady or slightly lower interest rates next year.

In a nutshell, in Kokomo the recovery will keep rolling for one more year. There is absolutely no threat of recession, despite the expected decline in auto sales in Detroit next year. □

Gary-Hammond-East Chicago (Calumet Area)

Leslie P. Singer

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In Northwest Indiana the recession in manufacturing and steel has not yet terminated. Unfortunately, the region has longer and steeper downturns than the rest of the nation (see **box**). Unlike other parts of the country, steel employment and employment in other local manufacturing tend to rise or decline in tandem. There is no countercyclical or compensating industry.

Average annual employment declined in local steel plants from 66,100 in 1970 to 38,200 in September of 1985. Simultaneously, employment in local manufacturing plants, excluding the steel mills, declined from 41,700 in 1970 to 21,900 in September of 1985.

There are few regions in the country where almost no businesses increase employment or expand when the principal industries decline.

A great deal depends on steel. However, steel employment need not rise for Northwest Indiana to prosper. **All that is necessary for growth in this region is for steel and manufacturing employment to stop going down.**

From 1970 to 1979, when Northwest Indiana registered its greatest gain in total employment, rising from 224,000 jobs in 1970 to 268,000 jobs in 1979, manufacturing employment actually declined, from an annual average of 107,800 jobs in 1970 to 103,800 in 1979. Steel employment was almost steady, increasing by a small fraction, from 66,100 in 1970 to 66,600 in 1979.

The Northwest Indiana economy was

Table 1

Northwest Indiana Wages and Salaried Employment
(Adjusted Quarterly Rates in Thousands of Employees)

	Actual				*Projected*			
	1985/1Q	*1985/2Q*	*1985/3Q*	*1985/4Q*	*1986/1Q*	*1986/2Q*	*1986/3Q*	*1986/4Q*
Manufacturing employment	60.8	61.1	60.2	59.9	61.1	62.0	61.9	61.7
Steel employment	39.2	38.9	38.3	37.2	38.4	37.8	37.6	36.8
Other steel-related manufacuring	19.0	19.7	19.4	20.1	20.5	21.1	21.5	22.5
Nonmanufacuring employment	150.8	152.8	154.3	155.4	152.2	153.4	154.9	159.9
Industrial nonmanufacturing (const., util., transport)	22.7	22.5	23.1	23.6	23.7	23.8	23.7	23.9
Services and trade (incl. retail, wholesale, fin., health)	97.4	99.0	99.6	102.6	99.5	101.3	101.5	106.9
Public sector (incl. government, education)	29.7	28.3	30.0	29.2	29.0	28.2	29.6	29.1
Total employment	**210.8**	**212.9**	**213.1**	**215.3**	**213.4**	**215.3**	**216.8**	**221.6**
Private nonmanufacturing employment (excluding public sector)	121.1	124.5	125.3	126.2	123.2	125.1	125.2	130.8

Note: Numbers may not add to totals because of rounding.

fueled by the manufacturing and steel payroll, not by employment. Employment in businesses other than manufacturing, in services, finance, banking, building, and in trade, advanced from 115,400 in 1970 to 167,000 in 1979.

When employment in manufacturing declined from 103,800 in 1979 to 90,700 in 1981, employment in the remainder of the regional economy also declined: from 164,000 in 1979 to 158,600 in 1981.

The drop in regional employment other than in manufacturing was much smaller than the decline in manufacturing and in steel. The proportionate decline in payrolls and in nonwage income (pensions, supplemental benefits) was much smaller than the decline in employment. From 1984 to 1985 manufacturing employment declined from 66,500 to 60,400. The payroll, however, increased from $1.8638 billion to $1.8712 billion.

For growth to resume, all we need is for employment in steel to stabilize.

If steel employment does not decline much below 38,000 full-time equivalent jobs—that is, the number of persons whom the steel companies would employ if each employee worked a standard 40-hour week—then total employment in Northwest Indiana gradually will begin to rise.

Once growth resumes, the chances of attracting new firms will be greatly enhanced. Much of the new business expansion in the next three to four years will be in the eastern part of the three-county region (Lake, Porter, and LaPorte).

Three years ago I predicted that the steel industry would stabilize between 38,000 and 40,000 full-time equivalent employees. In September of 1985, 38,200 steel employees worked an average of 42.5 hours per week.

Table 2

Northwest Indiana Actual and Projected Payrolls
(in Billions of Current Dollars: Annual Rates)

	Actual Payrolls		*Projected Payrolls*					*Annual Percentage Change*
	1985/2Q	*1985/3Q*	*1985/4Q*	*1986/1Q*	*1986/2Q*	*1986/3Q*	*1986/4Q*	
Manufacturing	1.771	1.799	1.803	1.917	1.931	1.929	1.923	6.66%
Steel	1.181	1.211	1.243	1.284	1.264	1.255	1.228	1.41%
Nonmanufacturing	2.422	2.397	2.436	2.285	2.310	2.350	2.442	1.88%
Serv. and trade (incl. health care)	1.254	1.262	1.229	1.192	1.214	1.217	1.282	1.59%
Total mfg. and nonmfg.	**4.193**	**4.196**	**4.239**	**4.202**	**4.241**	**4.269**	**4.365**	**4.03%**

Too Badly Hurt to Laugh

Abraham Lincoln once was asked how he felt about an election. "Somewhat like the boy in Kentucky, who stubbed his toe while running to see his sweetheart," Lincoln replied. "The boy said he was too big to cry, and far too badly hurt to laugh."

Northwest Indiana is like that boy. And even when everyone is hurting a little, Northwest Indiana seems to hurt worse.

Total civilian employment for the U.S. as a whole was compared to total civilian employment for the Northwest Indiana Metropolitan Statistical Area. The comparison was made for four business cycles, from December 1979 to November 1982.

The results showed that economic conditions go downhill faster in Northwest Indiana than in the rest of the nation—and they take longer to go uphill. The Northwest Indiana economy turns *down* an average of 4.16 months before the national economy goes down and turns *up* an average of 11.7 months after the national economy goes up.

When times were good nationally, Northwest Indiana did slightly better. Compare the average percentage gain in employment from trough to peak:

U.S.	+ 7.645%
N.W. Indiana	+ 10.308%

But when times were bad nationally, Northwest Indiana did even worse. Compare the average percentage loss of employment from peak to trough:

U.S.	- 1.532%
N.W. Indiana	- 12.017%

This represents 40,580 full-time equivalent jobs. Although I do not expect any growth in steel in 1986, 38,000 to 40,000 employees is still a valid long-range forecast.

The steel companies will continue to weed out product lines that cannot compete with imports. Steel companies will concentrate on large clients, such as auto and defense, who are not likely to switch to foreign producers.

An expanding industry of steel intermediaries, such as service centers and finishing mills, will continue to buy steel from a variety of sources. Some steel will be purchased from large rolling mills, such as those located in northern Indiana, some from mini-mills, and some from foreign producers. The full-line steel company, with its numerous specialized bureaucracies serving thousands of customers, is a creature of the past. Local steel plants already have surrendered many markets to foreign producers and to mini-mills. Without steel imports, the U.S. economy can no longer satisfy its needs.

If the U.S. economy in 1986 grows at a rate exceeding 3%, local manufacturing employment will stabilize as indicated in **Table 1.** On the other hand, if the U.S. growth rate falls much below 3% or does not exceed 2%, Northwest Indiana steel employment will continue to decline and may fall to 37,000 full-time equivalent jobs by the end of 1986 or early 1987.

At low national growth rates, several more product lines will be discarded and further reductions in white-collar employees and production workers will be necessary as local steel companies continue to suffer losses.

The possibility of a steel strike cannot be completely discounted. To be successful in their current streamlining efforts, local mills must get concessions on work rules.

To be effective in preserving or adding steel jobs, wage concessions would have to be so large as to be unattainable. All this must be clear to the steel companies as well as to the steel unions. Consequently, a long strike would be irrational.

As Table 1 shows, there has been almost no growth in private nonmanufacturing jobs. Moreover, insufficient future growth is predicted. The local economy, therefore, will be unable to absorb the growing pool of untrained labor in the urban areas, causing ever-increasing pressures on the public poor relief and welfare sector.

Some growth is expected in exports of labor, mostly female, to the Chicago metropolitan districts and the collar counties. As more people eat out, restaurants, fast foods, and other services will expand.

The bureaucracies in what might be termed the "poverty industry" will continue to expand in 1986. This will cause government employment to rise slightly, in spite of anticipated cutbacks in other public service employment.

Richmond

Ashton I. Veramallay

Director, Center for Economic Education, Indiana University East

The Richmond area economy can expect modest growth in 1986 as the national economic expansion continues. Growth in local gross domestic product will be influenced by business conditions at the national level, particularly in the transportation-related and service industries. A significant part of the local economy is intricately tied to these industries, and a slowdown can have adverse effects on business activities in Wayne County.

Some local firms are already experiencing the effects of current economic conditions on their employment, output, and sales. Of the respondents to an October survey, 12% felt the effects very severely; 16.5%, severely; 50.5% moderately; and 15%, slightly. Only 6% were unaffected. If this trend continues in the coming year, coupled with plant closings, layoffs, and discouraged workers, unemployment is likely to register in the 7% to 9% range.

Consequently, earlier gains in employment will be eroded.

This trend, however, is reversible if Richmond, through its current aggressive marketing strategies, is successful in attracting new businesses. An overwhelming majority of the survey respondents (96%) favor foreign investments/firms coming into Wayne County. Furthermore, three-fourths of the respondents think that the county has the right climate to attract foreign enterprises, and 86% are in favor of free trade among nations rather than protectionist trade policies that distort resource allocation and efficiency.

The catering, hotel, recreational and retail businesses will benefit considerably from the multimillion-dollar activities generated by the convention and tourism bureau.

On a brighter note, the service sector, especially the convention and tourism bureau, may play a key role in invigorating the local economy. The catering, hotel, recreational, and retail businesses will benefit considerably from the multimillion-dollar activities generated by the convention and tourism bureau. City leaders may also find it worthwhile to develop an attractive package by economically integrating Richmond, Centerville, Cambridge City, Connersville, Brookville, Metamora, and Indianapolis for tourist dollars. There are potential economies of scale to be realized from such a package.The Indianapolis 500 and Hoosier Dome demonstrate the need for this type of venture, which eventually can be a vehicle for local diversification, employment, growth, and stability.

Business confidence is still strong. About 76% of the respondents are optimistic about business conditions in 1986, and 74% believe that Wayne County has benefited from Reaganomics. Despite this optimism, respondents have a deep concern regarding the gargantuan federal budget deficit and its potential impact on the national economy. Wayne County, given its interdependence with the national economy, is not immune to this impact.

Consumer confidence is still high. Real personal income is on the rise because of lower inflation. This augurs well for a strong fourth quarter for the retail sector as consumers buy big-ticket items during the holiday season. If present trends continue, consumers may carry the spending hangover into early 1986 since no recession is anticipated at that time.

Overall, I predict a strong fourth quarter and modest growth in the local economy during 1986. Accelerated growth is possible if existing operations expand and if businesses that create jobs locate in the Wayne County area. □

Evansville

Maurice Tsai

Professor of Economics, University of Evansville

In 1985 the Evansville economy grew at 3% in real output, 1% less than earlier projected. Slow national growth in the first half was reflected in the local economy. In the second half of 1985, the local economy should gain slightly as the national economy becomes more active.

Throughout 1985, the regional economy showed a moderate growth in most sectors except in industrial production and finance. Strong activity in construction and transportation should continue into 1986 and beyond. The regional employment has improved significantly from the bottom level of 1983.

In the coming year, the regional economy is projected to advance at a modest rate similar to 1985. The Evansville Area Business Index should grow from 1985's 109.05 to a 111.00 level in 1986, a 2% growth on the input basis (see **Table**). When the labor productivity growth of 1 to 2% is added, the real output and income should grow by 3 to 4%. All sectors, including industrial production and finance, will grow at similar rates.

Strong sectors again will be construction and transportation. Lowered interest rates and high-geared public construction (Division Street Project) will contribute to the strength of this sector. Various improvements in highways and streets and the airport expansion project currently under way will stimulate air and land transportation activities. A revived manufacturing sector also will supplement more transportation activities.

Retail and wholesale activities will pick up in 1986 as personal incomes rise. Automobile sales may lose some strength due to saturation of the market and to imports replacing domestic cars. The service industries in general will remain active. However, as in the past few years, the health care sector may have to endure adjustment caused by overcapacities and reduced public health assistance. Still, the Trade and Services Index is expected to rise by 1.8% compared to 1985's 2.4%.

The industrial production sector will grow in 1986 after its decline in 1985. The shutdowns of factories and layoffs of workers are over. Production for inventory buildup and consumer durables will advance as personal incomes rise and the housing picture improves. The Industrial Production Index will increase by an estimated 2%.

1986 will be another year of moderate growth for the Evansville economy. In terms of real output, the growth rate will be 3%. All sectors will show some growth, and the local unemployment rate may drop to 7%.

The finance sector will grow again this year as general economic conditions improve and local major banks expand by merging with nearby county banks. Increases in business and consumer demands for funds are other positive factors.

Airport expansion, downtown and riverside projects, and great improvements in the highway and street systems will provide a better business environment in the future.

Employment conditions will continue to improve in 1986. However, because local employment increased in 1984 and 1985, there may be less room for improvement in 1986. The new operation of a Zayre Corporation unit should boost local employment, but it will be partially offset by layoffs at the Zenith plant. The local unemployment rate has declined steadily from 1983's 10.2% and 1984's 8.4% to 1985's 8.1%. The 1986 rate is estimated to be 7.6% and may drop to 7% by the end of 1986.

In summary, 1986 will be another year of moderate growth for the Evansville economy. In terms of real output, the growth rate will be 3%. All sectors will show some growth, and the local unemployment rate may drop to 7%.

The local economy is looking forward to still higher growth rates in the years to come. Recent efforts in building and improving the local infrastructure are the basis for such an optimistic forecast. Airport expansion, downtown and riverside projects, and great improvements in the highway and street systems will provide a better business environment in the future. What the region needs are:

- Improved markets for medical services;
- Some high-tech industry; and
- Perhaps an improved image of management-labor relations.

The region should attract more basic industries that produce goods and services exportable to other regions and abroad. □

Evansville Area Business Index
(1972 = 100)

Period	*Industrial Production*	*Trade & Services*	*Construction*	*Transportation*	*Finance*	*Employment*	*Composite Index*
Quarterly Index							
1983/3Q	109.34	106.48	107.14	91.27	104.91	101.74	105.96
1983/4Q	115.02	105.60	98.46	92.73	106.52	103.89	107.27
1984/1Q	120.00	106.05	104.58	95.18	105.03	103.23	109.63
1984/2Q	114.52	104.70	108.09	94.11	106.40	102.07	107.47
1984/3Q	111.17	106.12	100.73	95.15	106.56	103.70	106.34
1984/4Q	114.27	107.18	101.24	95.69	106.65	106.04	108.21
1985/1Q	117.41	109.63	104.69	100.12	103.43	106.16	110.63
1985/2Q	112.18	109.27	103.92	98.43	103.97	105.40	108.45
1985/3Q	109.84	106.74	113.07	99.34	105.26	107.10	107.92
Annual Index							
1981	108.83	102.28	107.63	98.94	97.75	105.57	105.01
1982	104.52	102.36	103.62	93.23	102.40	102.85	102.64
1983	108.14	104.10	116.09	91.36	104.60	100.71	105.41
1984	114.99	106.01	103.66	95.03	106.16	103.76	107.95
1985 (est.)	113.40	108.54	107.92	99.35	104.29	106.67	109.05
1986 (proj.)	116.00	110.50	115.00	103.00	107.00	107.50	111.00

Source: Maurice Tsai, School of Business, University of Evansville.

Lafayette

William C. Dunkelberg, *Associate Professor of Economics, Purdue University*
Jeff Van Hulle, *Graduate Student in Economics, Purdue University*
Dorothy Mansfield, *Labor Market Analyst, Indiana Employment Security Division*

This outlook is sponsored by the Greater Lafayette Chamber of Commerce. The results are based on 49 questionnaires returned in 1985 and 59 returned in 1984 from a random sample of 100 firms in the Greater Lafayette area. The sample was drawn from the membership of the Chamber of Commerce. Without their cooperation, this study would not be possible. All data are strictly confidential and all respondents are anonymous. The authors express their appreciation to the firms that participated in the survey.

Overall, 1985 was an excellent year for the Greater Lafayette area. As anticipated in the November 1984 Greater Lafayette Area Economic survey sponsored by the Chamber of Commerce, the economy flourished. Employment gains have been substantial, pushing total employment to a new high. Sales gains and profits have been healthy, and businesses expect this prosperity to continue into the new year.

Employment

1985 saw total employment eclipse the record set in 1979, the peak of the last business upswing. Total employment in September of this year stood at 61,500 compared to 60,300 at the last cyclical peak (see **Table 1**).

Even construction employment has responded to the force of the recovery after languishing for years while the recovery sped on. Losses in manufacturing and construction employment from 1979 levels have

Figure 1

Unemployment in Tippecanoe County 1979-1985
(in Thousands of Persons)

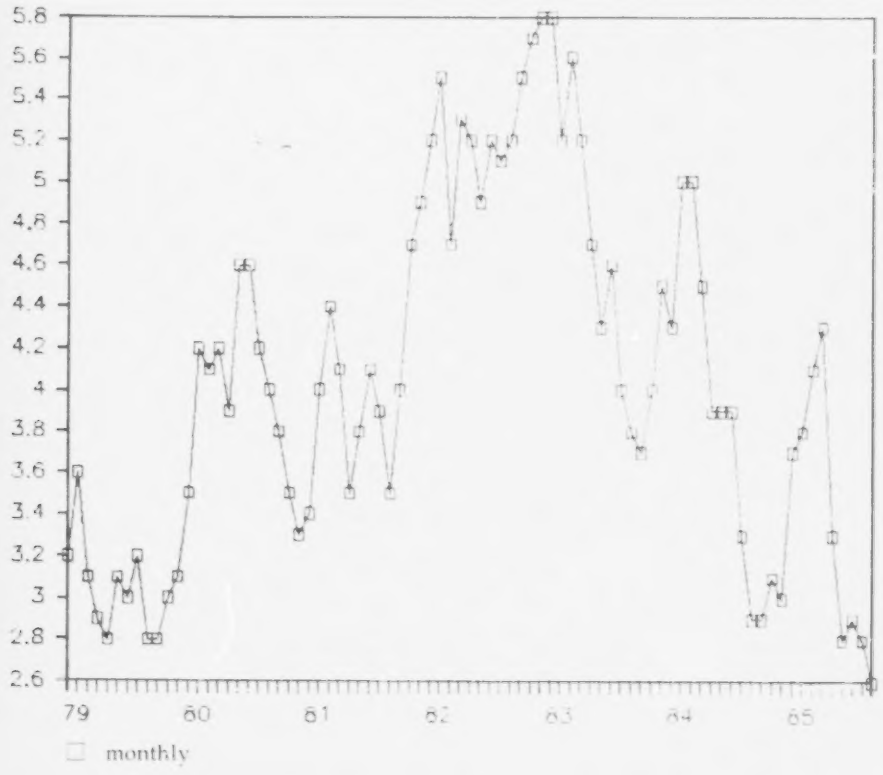


Table 1
Greater Lafayette Employment Trends

Industry	*Peak 1979*	*Jan. 1983*	*Jan. 1984*	*Jan. 85*	*Sept. 85*
Manufacturing	12,900	9,900	10,800	11,300	11,200
Construction	2,700	1,400	1,200	1,400	1,800
Transportation	1,600	1,700	1,700	1,800	1,800
Whlse/Retail	12,000	11,300	11,800	12,100	12,700
Services	9,200	9,100	9,400	10,100	10,400
Government	2,600	2,200	2,300	2,300	2,500
Education	17,600	17,500	17,600	17,300	18,200
Other	1,700	2,500	2,500	2,800	2,900
TOTAL	**60,300**	**55,600**	**57,300**	**59,100**	**61,500**

Table 2
Sales Distributions of Respondent Firms

Sales	*Respondents*	
	#	*Pct.*
Under $200,000	10	21%
$200,000—$800,000	10	21
$800,000—1,500,000	8	16
$1,500,000 or more	19	39
No answer	2	3
Respondents	**49**	**100%**

Total employment in September of this year stood at 61,500 compared to 60,300 at the last cyclical peak.

been made up for by gains in service, education, and retail trade employment (see **Figure 1**).

Sales

Forty-nine firms responded to the November survey, down 10 from last year but sufficient to provide a picture of the outlook for 1986. The sales distributions of these firms are shown in **Table 2.** Firms of all sizes are represented.

More firms reported improvements in sales volumes this year than last, although average increases were larger on average in 1984 (18% vs. 14% in 1985) (see **Table 3**). However, far fewer firms expect increases in their real sales volumes for 1986. Only 57% expect an improvement in real sales averaging 16%. Last year, 70% expected gains averaging 17% in real sales. Still, no firm expects any major reversals in sales, suggesting that few firms expect the economy to move into a recession.

Profits

Fewer firms reported profit improvement in 1985 as well, but the profit picture still appeared to be good for two-thirds of the firms (see **Table 4**). Thirty-seven percent reported lower earnings, up from 14% in 1984.

Table 3
Lafayette Sales, 1984 and 1985

	Sales Volume				*Real Sales Expectations*			
			Avg. Pct Change				*Avg. Pct. Change Expected*	
	1984	*1985*	*1984*	*1985*	*1984*	*1985*	*1984*	*1985*
Higher	54%	59%	18%	14%	70%	57%	17%	16%
Lower	18%	18%	9%	8%	5%	0%	37%	—
Same	28%	23%	—	—	25%	43%	—	—

Table 4
Profits in 1984 and 1985

	1984	*1985*
Higher	46%	31%
Lower	14%	37%
Same	36%	32%

Increasing Employment

Plans to increase employment are more frequent today than a year ago, with 50% planning to increase employment compared to 41% a year ago (see **Table 5**). However, the average planned increase in 1984 was 16 employees, compared to 8 employees for 1986.

Planned Capital Outlays

In 1984, 59% of firms planned to make some type of capital outlay during 1985. At this point in the expansion, capital spending plans are even more frequent, even though the recovery is now three years old and there is rising uncertainty about the future course of sales and demand. Sixty-five percent plan capital outlays, with the primary focus shifting even more in favor of equipment and vehicles (see **Table 6**). The lack of activity in "new structures", an indicator of additions of big blocks of new capacity, is typical of the national expansion.

Table 5
Employment Plans of Lafayette Firms

# of Employees		*12-Month Employment Plans*	*1984*	*1985*	*Average Change in # of Employees 1984*	*1985*
Under 10	41%	Increase	41%	50%	16	8
10-49	20%	Keep the same	48%	46%	—	—
50-199	10%	Decrease	11%	4%	44	15
200 or more	29%					
	100%					

Table 6
Planned Capital Outlays for Lafayette Firms

			Type of Outlay	*1984*	*1985*
Yes	65%	→	New structures	18%	12%
No	25%		Expansion/improve	20%	20%
Uncertain	10%		Equipment	41%	53%
			Other	5%	10%
	100%				

Table 7
Most Important Problems of Lafayette Firms

Problem	*1984*	*1985*
Weak sales; demand	14%	16%
Labor costs	16	2
Availability of skilled labor	2	6
Interest rates, credit availability	21	8
Inflation; rising costs	5	4
Regulation; red tape	11	16
Taxes	4	10
Competition	23	24
Foreign competition	2	2
Other	2	12
	100%	100%

Most Important Problems

The major concern of local firms remained "competition"—a legitimate concern of any viable enterprise (see **Table 7**). In spite of this concern, reports of profitability remained good. Fading in importance were interest rates and financing problems and labor costs. Replacing these were taxes and government regulation, factors that should not be dissipating the energy and strength of our firms. Meaningless regulatory compliance is like a tax, diverting the use of valuable resources.

Overall, the outlook appears quite positive for 1987. Though it lacks some of the exuberance of 1984, it is spread more evenly in the area economy. Employment should continue to grow if firms realize the real sales gains that are anticipated. □

Anderson-Muncie

Robert R. Jost

Professor of Economics, Ball State University

This analyst attaches a 60% probability to the realization of the Indiana University 1986 forecast for a 3 to 4% growth in real GNP.

As we commence the fourth year of recovery, given uncertainties regarding the budget and trade deficit, exchange rates, an atypically low personal saving rate, and possible tax changes, the risks are greater on the downside of the forecast. Thus, I would assign a 30% probability to the prospect of GNP increasing less than 3%, and only a 10% probability to its exceeding 4%. Growth of less than 3% is much more likely if we focus on this region, this state, and particularly the Anderson-Muncie area.

Growth of less than 3% is much more likely if we focus on this region, this state, and particularly the Anderson-Muncie area.

Even after three years of national economic recovery, employment gains in the Great Lakes states have not offset the flood of job losses associated with the 1979-82 debacle. Although employment in these states is less than what it was in mid-1979, the nation's payroll employment is 9% higher for the comparable period. Obviously, employment in the particular mix of industries located in these Great Lakes states—motor vehicles, steel, farm machinery, and agriculture—has not shared proportionately in the general prosperity of the nation.

What these states have experienced in general applies to the Anderson and Muncie MSAs, *but with far greater severity.*

Employment

Let us first focus on the historical record of establishment employment. From a peak in November 1978, Anderson's establishment employment went downward, troughing in February 1982 at an annual rate of -9.4%. Establishment employment in the Muncie MSA peaked in October of 1979, and declined at an annual rate of -6.7% through August of 1982.

To minimize seasonal variation, let us compare both MSAs for the November 1978 to November 1982 period. During that time establishment employment declined at an annual rate of -6.5% for Anderson and -3.9% for Muncie. If the economic recovery is included in the data by using a November 1978 to November 1984 time frame, establishment employment still declined at an annual rate of -2.5% for Anderson and -1% for Muncie. Anderson's relatively greater severity of incidence is dramatized by noting that its establishment employment averaged 3,500 more than Muncie's during the 1977-78 period but just equalled that of Muncie as of September 1985. Keep in mind that establishment employment in Anderson as of September 1985 was still 11% below its November 1978 peak, and Muncie was 9% below its October 1979 high.

Demographics

Recent demographic data substantiate the conclusion that these two counties have suffered rapid hemorrhaging of their economic bases. From April 1, 1980, to July 1, 1984, the populations of the Anderson and Muncie MSAs declined an estimated 3.7 and 3.9% respectively, whereas Indiana's population count remained unchanged.

Projected population trends for the Anderson and Muncie MSAs are much less traumatic, but they strongly reinforce the conclusion that these areas have serious economic adjustments ahead. A study by the Bureau of Economic Analysis of the U.S. Department of Commerce projects average annual rates of population decline for the Anderson and Muncie MSAs at -.2% and -.3% respectively for the 1983-2000 time frame. Bear in mind that, of the 330 MSAs in the U.S., the Department of Commerce projected that only 33 would carry a minus sign. No other MSA in Indiana comes anywhere near matching the annual rates of decline projected for Anderson and Muncie. Indeed, these negative rates are only a few places removed from the worst in the nation. However, the reader is cautioned to regard the Muncie projection with a jaundiced eye; population projections for MSAs possessing relatively large university populations are frequently wide of the mark.

Income

If one looks at personal income, another gloomy picture is revealed. Nominal personal income in Indiana grew at an annual rate of 7.69% in the seven-year 1978-84 period. This rate was the second lowest growth rate among the Great Lakes states, which in turn grew substantially below the national average of 9.77%. Nominal personal income data for 1984 are not yet available for Madison and Delaware Counties, but for the six-year 1978-83 time frame, they grew at annual rates of 5.4 and 5.8%, as opposed to 6.89% for Indiana.

Thus, historical trends in establishment employment, demographics, and personal income all tend to reinforce the somber appraisal that Anderson and Muncie have indeed experienced some very hard times.

Historical trends in establishment employment, demographics, and personal income all tend to reinforce the somber appraisal that Anderson and Muncie have indeed experienced some very hard times.

Strong auto sales during the third quarter of 1985 have helped to sustain local area employment gains. But these buoyant sales were subsidized by lower-than-market rates of interest, and they do not appear to have carried over into the fourth quarter. Aggregate auto sales are expected to decline to 9.7 million units in 1986, but import market penetration is expected to rise to more than 30% of total sales. Given the long lags

involved, relief for the manufacturing sector from the declining dollar probably will not substantially mitigate deterioration in the trade sector until late in 1986, if then.

1986 Outlook

In short, declining auto sales in 1986, an increasing market share captured by imports, and the uncertain lags associated with varying exchange rates are factors that do not bode well for the local economies in 1986.

Declining auto sales in 1986, an increasing market share captured by imports, and the uncertain lags associated with varying exchange rates are factors that do not bode well for the local economies in 1986.

Anderson. Looking beyond 1986, the continued diminution of employment in Anderson's GM plants seems quite probable, given the growing intensity of foreign competition and the exceptionally high wages paid by the domestic industry. True, the current construction of the Magnaquench plant (see *IBR*, May-June 1985) constitutes a tribute to the combined efforts of management, labor, and government to slow this diminution, but its future impact on employment is uncertain until more is known of the operational efficiency of this technological breakthrough in the products market. It is also true that some of Anderson's older GM plants are probably too labor-intensive to compete in price and quality in world markets. To the extent that GM retools these plants, jobs still will be reduced in the short run. Employment losses in Anderson's GM plants may very well exceed 300 jobs annually between 1986 and 1990.

Employment losses in Anderson's GM plants may very well exceed 300 jobs annually between 1986 and 1990.

Muncie. The outlook for Muncie's much smaller durable goods manufacturing sector is also far from rosy. Warner Gear, Muncie's largest industrial employer, announced that it was shipping its marine and industrial manufacturing unit to South Wales—a net loss of 300 jobs. Current contracts and orders suggest substantially larger layoffs in this Borg Warner plant in the near future. Ontario Corporation has cut back operations to one shift in response to the actions of Pratt & Whitney, the aircraft engine producer, which contracted with foreign suppliers for work previously performed by Ontario. Employment at the Westinghouse transformer plant remains near an all-time low. The manufacturing sector is not likely to provide much job growth in Anderson or Muncie in 1986.

The Service Sector. The Indiana University forecast assumes employment gains in Indiana will be centered largely in the nonmanufacturing sector—to wit, the service sector broadly defined. Indiana's service sector represents 55% of total employment as compared to 64% for the nation.

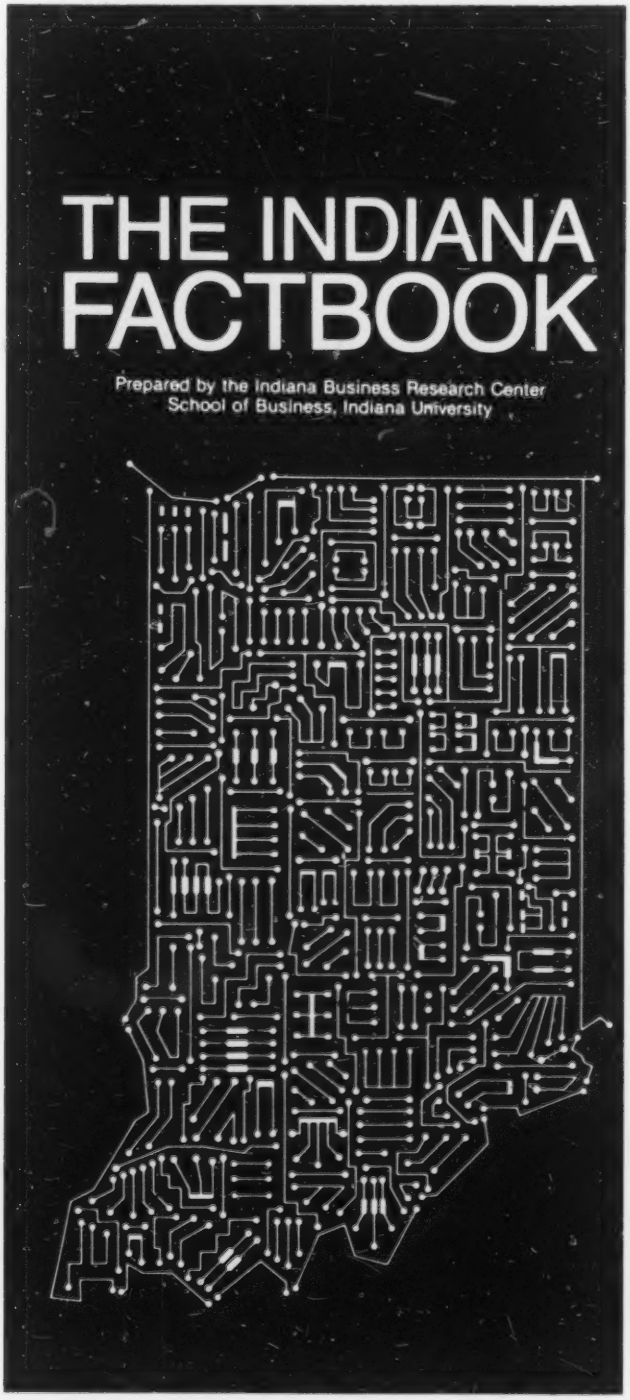
Location quotients for the Anderson and Muncie MSAs are not available, but those for Indiana indicate a disproportionate part of the state's labor force is engaged in manufacturing and farming compared to the norm for the nation. Indiana's 1979-82 change in service employment registered -2.3% as opposed to a +3.5% gain for the nation.[1] Here it would appear there is room for growth.

Given Anderson's disproportionately high concentration on durable goods production—37% of its establishment employment—one would expect growth in the supporting service sector. Although Anderson has made some sizable gains in retail outlets and restaurants in recent years, establishment employment numbers show anemic growth in this sector. Anderson's close proximity to Indianapolis enables the capital city to siphon off much of Anderson's potential service employment. Not only do many residents of Anderson shop in readily accessible Indianapolis malls, but a significant number of them also work in Indianapolis and its environs.

Muncie's much more diversified economy is quilted with small firms. Durable goods production constitutes only 24% of its establishment employment. Muncie is geographically further removed from Indianapolis and is surrounded by relatively rural counties that provide a market for the export of services—a role in which Ball State University is a major factor.

The relatively optimistic Indiana University forecast for Indiana probably will not be matched by the Muncie economy, but Muncie should weather 1986 more successfully than Anderson. □

1. Keil and Mack, *Development of the Service Sector in Indiana*, Office of Economic Analysis, State of Indiana Department of Commerce, 1985: 1.


THE INDIANA
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Some Regional Forecasts

Indianapolis

Although some individual manufacturing firms will increase their employment levels, no employment growth is expected from the manufacturing sector as a whole. In fact, if there are no net losses, 1986 will be a significant improvement over 1985.

Louisville Area

Employment should increase as much—and perhaps a little more—in 1986 as in 1985, bringing the total number of jobs in the MSA close to the prerecession peak.

Calumet Area

Much of the new business expansion in the next three to four years will be in the eastern part of the three-county region (Lake, Porter, and LaPorte).

Kokomo

Kokomo's economy, largely influenced by trends in the durable goods sector of the national economy, should continue to do well in 1986, though not with the same vigor registered in 1985.

South Bend-Elkhart

Some progress has been made locally and the present sluggishness is not a prelude to an imminent downturn.

Indiana Business Review

Indiana Business Research Center
Graduate School of Business
Indiana University
Bloomington, Indiana 47405

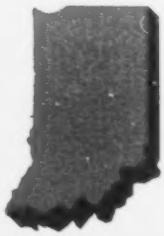
November-December 1985

Nonprofit Organization
U.S. Postage
PAID
Bloomington, Indiana
Permit No. 2

1986 Outlook Issue

4/28/86 42160-1

A publication of the
Indiana Business Research Center,
Indiana University School of Business



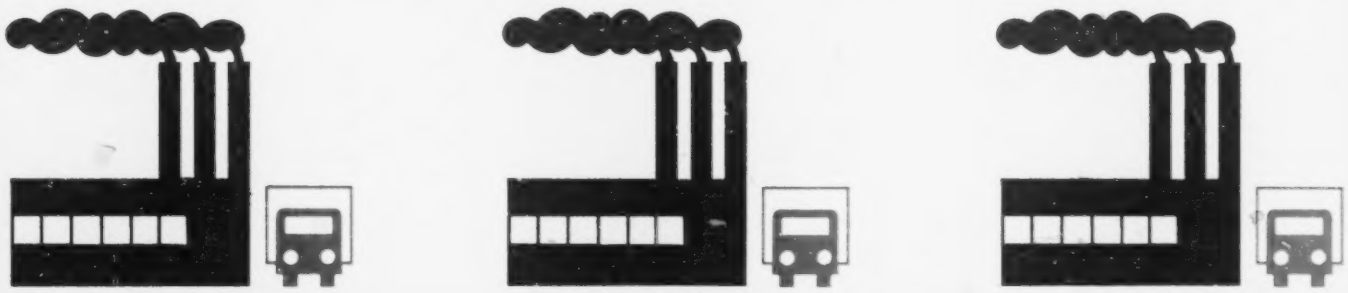
Indiana Business Review

Volume 61 January/February 1986

Robert Kirk — **The Troubled Waters of the Great Lakes Region: Profitability and Indiana Manufacturing, 1963-1977**

Wayne Bartholomew, Paul A. Joray, and Paul Kochanowski — **The Decline of Manufacturing in the Midwest: A Short-Run or Long-Run Problem?**

David L. Lantz — **Aiming for Growth in Indiana's Manufacturing Sector: A Targeted Industry Approach**



In this issue . . .

Where do we stand and where are we going? These questions continue to be of great interest to Indiana business. The central concern is profitability. Professor Robert Kirk of IUPUI tackles that most difficult issue for the manufacturing sector. The measurement and conceptual problems, as well as the diversity of the industries involved, create special headaches.

No easier is the task attempted by Bartholomew, Joray, and Kochanowski from I. U. South Bend as they explore the Midwestern economy and its problems.

What businesses should Indiana try to attract? David Lantz enters that jungle and offers his insights for our collective consideration.

Although none of these studies is conclusive, each is a valiant attempt to answer some basic questions that need to be addressed. It is to be hoped that these articles will stimulate further inquiry into what is needed to help Indiana business prosper.

M.J.M.

Indiana Business Review

Published six times each year by the Indiana Business Research Center, Graduate School of Business, Indiana University.

Jack R. Wentworth, Dean
Morton J. Marcus, Director and Editor

Judith S. Weisstein, Managing Editor; Lowell McCoskey, Systems and Programming Manager; Robin Daly and Ellin Wellers, Editorial Assistants; Kristi Hayes, Graphics Assistant; Vicki Blackwell, Compositor Coordinator; Melva Needham, Circulation; Nikki Livingston, Secretary; Jo Clontz, Office Manager; Louise B. Brown, Project Coordinator.

Unless otherwise noted, information appearing in the *Indiana Business Review* is derived from material obtained by the Indiana Business Research Center for instruction in the School of Business and for studies published by the Center. Subscriptions to the *Indiana Business Review* are available to Indiana residents without charge.

The Troubled Waters of the Great Lakes Region: Profitability and Indiana Manufacturing, 1963-1977

Robert Kirk

The author is a professor of economics at Indiana University-Purdue University at Indianapolis.

Rivalry among states for investment in new plants has become intense. Alternative state economic development strategies have been designed to attract new firms. Business writers have written many lines analyzing (or speculating) why Company XYZ chose Centerville over Tranquility. In Principles of Economics I, firms are assumed to seek maximum profits. This assumption leads to implications for the determination of the profit-maximizing level of output. While the time dimension is given explicit attention (short-run vs. long-run decision rules, for example), the spatial dimension is given less. However, in the political arena the location of and shifts in economic activity affect ballot-box outcomes and the levels of state and local revenues—and, therefore, services provided.

Why is the period of this analysis, 1963-1977, important to us in 1986? The period begins during a business expansion and ends during another one. It covers two recessions, 1969-1970 and 1973-1975. Thus, the period covers more than a business cycle and allows us to examine longer-term trends in the economy. By focusing on trends rather than a cycle, we reduce the role of aggregate demand fluctuations and give greater attention to changes in the costs of production and profitability in Indiana relative to the national economy. Finally, since the period started before the oil price increases of the 1970s, we are able to make observations about changes in interstate and interregional profitability before the relative change in the price of oil.

Profit is revenue minus costs. Since costs vary over space, profitability varies spatially too. How has the profitability of Indiana's manufacturing sector compared to the U.S. manufacturing sector? This question is addressed by reference to estimates of gross state product, a data source recently developed by the Bureau of Economic Analysis (BEA), U.S. Department of Commerce.[1]

Table 1 shows the average annual rate of growth in real gross state product for the U.S., regions, and states within the Great Lakes region for 1963-1977, the BEA estimation period.

Noticeable regional differences appear. The Southwest is 81 index points higher than the Mideast. Within the Great Lakes region, with the exception of Wisconsin, there is little differentiation. Indiana's rate is 80% of the U.S. rate.

Table 1 is for gross state product—across all industries. But what is the rate of growth in gross state product in manufacturing only? **Table 2,** like Table 1, shows the average annual rate of growth in real gross state product, but for only the manufacturing sector.

The ranking by region follows the pattern in Table 1 with the exception of the Plains area, which is below the U.S. in Table 1 but moves above the U.S., as well as above the Rocky Mountain and Far West regions, in Table 2. The range (from highest to lowest) of the index in Table 2 is greater than in Table 1. This greater range suggests that manufacturing is more spatially differentiated than all-industry gross state product. Greater differentiation is exhibited by the Great Lakes states in Table 2 than in Table 1; the range is from 113 in Wisconsin to 36 in Illinois. Indiana's rate in manufacturing is 86% of the U.S. rate, compared to 80% for all industries.

Indiana's rate in manufacturing is 86% of the U.S. rate, compared to 80% for all industries.

1. U.S. Department of Commerce, Bureau of Economic Analysis, *Experimental Estimates of Gross State Product by Industry*, BEA Staff Paper 42 (May 1985). In a recent issue of the *IBR*, Janet L. Fedde compared BEA estimates for Indiana with those produced by the Indiana Business Research Center and showed that the estimates were comparable. See "Indiana's Gross State Product," *Indiana Business Review*, September/October 1985: 14-20.

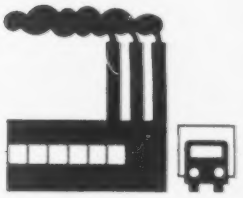


Table 1
Average Annual Rates of Growth in Real Gross State Product for the U.S., Regions, and Great Lakes States, 1963-1977

Region	*Average Annual Growth Rate*	*Index (U.S. = 100)*		*Highest or Lowest States in Region*
Southwest	5.45	150	*High*	Arizona 164, Texas 156
Southeast	4.75	131		Florida 163
Rocky Mountain	4.49	124		Colorado 143
Far West	3.98	110		Nevada 156
U.S.	**3.63**	**100**		
Plains	3.49	96	*Low*	South Dakota 79
Great Lakes	2.92	80		
Illinois	2.85	78		
INDIANA	**2.91**	**80**		
Michigan	2.90	80		
Ohio	2.82	78		
Wisconsin	3.42	94		
New England	2.88	80		Rhode Island 71, Mass. 73
Mideast	2.51	69		New York 55, Penn. 72

How might we interpret the differential rates of growth at the regional level? On the demand side, there has been a population shift from the North and East to the South and West.

The population shift to the West has had three components:

1. A higher rate of natural increase;
2. A favored destination for immigration from abroad; and
3. A favored destination for migrants from other U.S. regions.

In the South, Texas and Florida have gained population for the same three factors.

The decline in agglomeration economies has reduced the dominance of the traditional manufacturing belt.

On the supply (production) side, some analysts suggest that the shift in manufacturing, especially to the South, has been due to a decline in agglomeration economies—that is, economies that arise from firms locating close to each other to take advantage of shared services (for example, makers of women's high-fashion garments locating close to a sewing machine repair shop in lower Manhattan, or book publishers locating in New York City to take advantage of a pool of copy editors).[2] The decline in agglomeration economies has reduced the dominance of the traditional manufacturing belt.

Reasons suggested for the decline in agglomeration economies include technological changes in the areas of

- Production;
- Transportation; and
- Communication.

These changes favor nonmetropolitan areas.[3]

Specifically, newer production technologies require large tracts of land and low labor skills. As the production process becomes routinized, firms locate plants in nonmetropolitan areas, frequently in the South. Development of the interstate highways system and the preference for truck transportation made nonmetropolitan areas accessible. Use of telephone lines and computer networks to communicate processing and distribution information made urban locations unnecessary.

These demand and supply-side factors should have implications for the rate of profitability in different regions. Regions with growing population and relatively lower costs would be expected to have higher rates of profitability. What do the gross state product estimates for manufacturing suggest about profitability?

A Measure of Profitability

How is profitability of the manufacturing sector measured? It is derived from the estimates of gross state product. Because BEA's estimates are on a "where-produced basis," they are useful in making interstate comparisons.

The gross state product can be estimated by two methods. One is the sum-

Table 2
Average Annual Rates of Growth in Real Gross State Product in Manufacturing for the U.S., Regions, and Great Lakes States, 1963-1977

Region	*Average Annual Growth Rate*	*Index (U.S. = 100)*
Southwest	5.90	227
Southeast	4.16	160
Plains	3.66	141
Rocky Mountain	3.59	138
Far West	2.68	103
U.S.	**2.60**	**100**
Great Lakes	2.19	84
Illinois	0.94	36
INDIANA	**2.24**	**86**
Michigan	2.03	78
Ohio	2.17	84
Wisconsin	2.94	113
New England	1.76	68
Mideast	0.90	35

2. See Gerald A. Carlino, "Declining City Productivity and the Growth of Rural Regions: A Test of Alternative Explanations," *Journal of Urban Economics*, July 1985: 11-27; and Ronald L. Moomaw, "Firm Location and City Size: Reduced Productivity Advantages as a Factor in the Decline of Manufacturing in Urban Areas," *Journal of Urban Economics*, January 1985: 73-89.

3. Daniel Garnick and Vernon Renshaw, "Competing Hypotheses on the Outlook for Cities and Regions: What the Data Reveal and Conceal," *Papers of the Regional Science Association*, 45 (1980): 105-24.

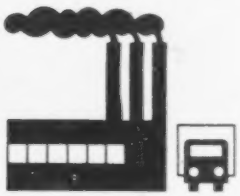


Table 3
Profit Rate in Manufacturing, 1963 and 1977, U.S., Great Lakes Region and Great Lakes States

Economy	*1963*	*1977*	*Change in Index Points, 1963-77*
U.S.	100	100	
Great Lakes	110	91	-19
Illinois	98	95	- 3
INDIANA	**115**	**95**	**-20**
Michigan	127	74	-53
Ohio	104	95	- 9
Wisconsin	105	111	6

mation of factor and nonfactor *charges* incurred in producing at market prices by labor and property located in the state. In national income terminology, it is the earnings approach to GNP obtained by summing wage and salary earnings, rent, interest, indirect taxes, depreciation, and profits. The other approach is to sum the *values added* in production by each economic unit.

The estimation procedure begins with business receipts and subtracts the costs of intermediate goods to obtain gross state product by industry. This is a *value-added* approach. To make estimates of profitability, the procedure shifts to charges—an *earnings* approach. Given data for wage and salary earnings and indirect business taxes, BEA estimates "other charges" incurred in production as a residual: other charges equal gross state product less wage and salary earnings and indirect business taxes.[4] The "other charges" may be viewed as a measure of corporate profitability (proprietors' income is a component of wage and salary earnings).

Because corporate profits cannot be separated reliably from other components of "other charges" (such as rent and interest), care must be exercised in interpreting the measure. For example, it is possible for an industry in a given state to have a high capital-to-labor ratio, which would imply a high proportion of "other charges" in depreciation and, therefore, a low profitability.

4. Earnings consist of the following: compensation to employees (including wages and salaries); supplements to wages and salaries (such as employer contributions to pension funds and social security); and proprietors' income. Indirect business taxes consist of tax liabilities chargeable to business expense but typically passed on to consumers (such as general sales tax, excise tax, licenses, and fees).

Indiana Profitability, 1963-1977

What has been Indiana's track record? To answer the question requires comparing Indiana with the U.S. The measure is the share of gross Indiana product in manufacturing accounted for by "other charges" (OC/GSP) relative to the share of gross national product in manufacturing accounted for by "other charges" (OC/GNP).

Table 3 compares Indiana manufacturing with the U.S. and with other Great Lakes states; the U.S. rate is the norm for comparison (equal to 100).

If the index is greater than 100, then the state has a higher profit rate than the U.S. Conversely, an index less than 100 means the state has a lower rate than the U.S.

In 1963 only Illinois had an index value less than 100; the other Great Lakes states had profit rates greater than the U.S. However, in 1977 only Wisconsin remained above 100. In fact, over the time period Wisconsin increased relative to the U.S. The increase in relative profitability is consistent with Wisconsin's experience in rate of growth in manufacturing gross state product, as shown in Table 2. In Table 3, Indiana's experience mirrored the Great Lakes region; both lost about the same number of index points.

The manufacturing sector consists of a variety of industries. Part of the differential performance reflects the different compositions of industries in each state's manufacturing sector. BEA made estimates of gross state product at the two-digit industry level. How did an Indiana industry compare to the same industry at the national level?

Table 4 provides profit rates for selected Indiana manufacturing industries relative to the U.S. The industries' gross state product represents about 80% of the total manufacturing gross state product in 1977.

In 1963, all of the durable goods industries except transportation equipment were above 100, suggesting that Indiana was a higher profit location relative to the industry nationally. However, over time in each durable goods industry the relative position of Indiana declined except for transportation equipment, which moved upward, toward the U.S. level. For nondurable goods, Indiana moved from a position below the U.S. to one above it. Food and chemicals, the two most important

Table 4
Profit Rate in Selected Manufacturing Industries, 1963, 1967, 1972, and 1977, U.S. and Indiana (Index: US. = 100)

Industry	*1963*	*1967*	*1972*	*1977*	*Change in Index Points, 1963-77*
U.S.	100	100	100	100	
Indiana manufacturing	115	109	102	95	-20
Durable goods	122	114	100	94	-28
Primary metal	129	109	96	47	-82
Fabricated metal	128	98	106	126	- 2
Nonelectrical machinery	130	98	94	105	-25
Electrical machinery	150	127	118	120	-30
Transportation equipment	74	76	69	85	11
Nondurable goods	94	99	106	109	15
Food	86	95	112	119	33
Chemicals	115	124	128	122	7

nondurables in terms of gross state product in Indiana, influenced the nondurables performance.

Care must be taken in interpreting these results because the composition of an industry (even at the SIC two-digit level) differs among states. For example, in transportation equipment Indiana is essentially an auto *parts* manufacturing state while Michigan is both an auto *assembly* and *parts* manufacturing state.

Earnings and Profitability

How might the differential performance across industries in Table 4 be interpreted? Some relevant factors already have been discussed. The demand factor involving population shifts, which was analyzed at the regional level, would be expected to affect all industries in the region. The supply (production) factors affect industries differentially. Technological change occurs that is industry-specific.

Profitability was measured by "other charges," a figure which, in turn, was the result of subtracting wage and salary earnings from gross state product by industry. A relative labor earnings rate was computed in the same way that the relative profit rate was determined: the share of gross state product in the specific industry accounted for by wage and salary earnings (EARN/GSP) relative to the share of gross national product in the same industry accounted for by wage and salary earnings (EARN/GNP).

Food and chemicals, the two most important nondurables in terms of gross state product in Indiana, influenced the nondurables performance.

Table 5 shows the labor earnings rates for selected Indiana manufacturing industries relative to the U.S. It is important to remember that these numbers compare Indiana to the U.S. in the same industry. They do not compare the earnings rate in a given industry to an all-industry rate.

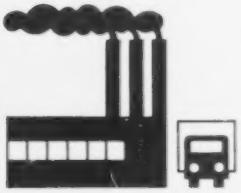
Profitability is related in an accounting sense primarily to two variables—gross state

Table 5
Earnings Rate in Selected Manufacturing Industries, 1963 and 1977, U.S. and Indiana

Industry	*1963*	*1977*	*Change in Index Points, 1963-77*
	(Index: U.S. = 100)		
U.S.	100	100	
Indiana manufacturing	94	103	9
Durable goods	93	102	9
Primary metal	89	112	23
Fabricated metal	94	93	-1
Nonelectrical machinery	91	99	8
Electrical machinery	89	94	5
Transportation equipment	111	104	-7
Nondurable goods	88	94	6
Food	74	80	6
Chemicals	88	89	1

Table 6
Average Annual Rates of Growth in Real Gross State Product in Selected Manufacturing Industries for Indiana, 1963-1977

Industry	*Average Annual Growth Rate in Indiana*	*Index (U.S. = 100)*
Manufacturing	**2.24**	**86**
Durable goods	2.55	92
Primary metal	1.37	68
Fabricated metal	3.95	111
Nonelectrical machinery	3.66	85
Electrical machinery	3.40	103
Transportation equipment	2.30	205
Nondurable goods	1.38	59
Food	-0.45 (contraction)	
Chemicals	2.73	89



product and wage and salary earnings. As Table 2 showed, Indiana's rate of growth in manufacturing was 86% of the U.S. rate. As Table 5 showed, Indiana's labor earnings rate changed from *below* the U.S. rate in 1963 to *above* the U.S. rate in 1977. The result was downward movement in Indiana's manufacturing profit rate.

Aggregate analysis disguises widely divergent patterns at a disaggregated level. **Table 6** shows that there were widely different rates of growth in real gross product for selected industries between the U.S. and Indiana.

Although the durable goods growth rate was much greater than the nondurables rate, both were less than their respective national rates. Transportation equipment stands out, with its rate more than twice the national rate. On the other hand, the food industry experienced a negative growth rate, and the primary metal industry's rate was only 68% of the national rate.

The transportation equipment industry grew at twice the national rate. Although the earnings rate was above the national one, the direction of change was toward the national rate. The result was an improvement in Indiana's profit rate—although it still remained below the U.S. rate.

In durable goods, a relatively slow growth rate in real product and an earnings rate that went from below to above the national rate put downward pressure on Indiana's profit rate. The story is the same for primary metal and nonelectrical machinery. Fabricated metal grew at a rate greater than the U.S. and had a profit rate that bounced around over the period but ended significantly above the national rate. Electrical machinery grew at the national rate and maintained an impressively high profit rate. The transportation equipment industry grew at twice the national rate. Although the earnings rate was above the national one, the direction of change was toward the national rate. The result was an improvement in Indiana's profit rate—although it still remained below the U.S. rate.

In the nondurable sector, the negative rate of growth in real product for food (in the face of a profit rate that increased over the period to exceed the national rate) implies that many plants were closed and the remaining plants had a profit rate above the national level. Chemicals maintained a profit rate above the national level, with a growth rate to output below the national level.

Chemicals maintained a profit rate above the national level, with a growth rate to output below the national level.

Change as a Constant

With the aid of gross state product estimates by state and by industry, comparisons have been made between Indiana and the nation in terms of growth in production, a measure of profit, and labor earnings. The analysis indicates that there are strong regional differentials, as well as widely divergent patterns within a state (Indiana) at a disaggregated industry level. The regional differentials reflect the redistribution of population to the South and West and the spatial diffusion of the manufacturing belt due to less need to concentrate spatially. The differences among industries indicate that each industry responds differentially to changes in its markets, technology, and costs of production.

The regional differentials reflect the redistribution of population to the South and West and the spatial diffusion of the manufacturing belt due to less need to concentrate spatially.

Table 4 indicates that the profitability of Indiana durable goods manufacturing declined relative to the U.S. progressively over the period. Associated with this relative decline, Indiana's annual percent increase in manufacturing capital stock (3.5%) lagged behind the U.S. rate (4.3%).[5]

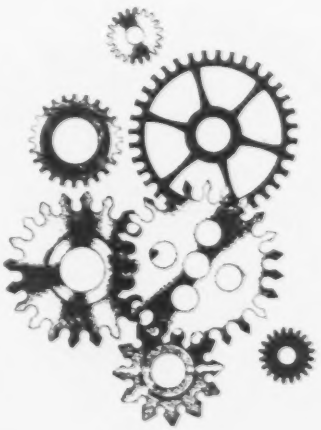
What are the policy implications? There are a variety of ways to increase relative profitability. They include:

- Reorganization of production to reduce the break-even point;
- Closing of unprofitable activities; and
- Investment in new plant and equipment to increase labor productivity and thereby reduce the unit cost of production.

During the 1980-82 recession, each of these strategies was used by Indiana manufacturing firms. These strategies continue to be used in the face of strong national and international competition.

It will be interesting to update the analysis when 1982 gross state product estimates are available. Significant structural changes are expected to appear at the regional level. For example, New England's economy has shifted to a high-tech economic base. The Southwest's oil-based expansion has been undermined. How will Indiana's economy fare? Change appears to be the only constant and makes an extension from the past an unwise and a risky business. □

5. Data provided through personal correspondence with Lynn E. Browne, Federal Reserve Bank of Boston.



The Decline of Manufacturing in the Midwest: A Short-Run or Long-Run Problem?

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The United States economy experienced many difficulties during the 1970s and early 1980s. While real GNP per employed person grew at a 1.8% rate from 1960-1973, it grew at only a 0.1% rate from 1974-1978.[1] Real GNP grew by 2.8% from 1978 to 1979, but declined between 1979 and 1980 and again between 1981 and 1982. The growth rates of other countries remained higher than those in the U.S. during the 1970s, even though these growth rates were decreasing.

While the annual unemployment rates increased in most major industrial nations during the 1970s and the first few years of the 1980s, the U.S. rates were higher than those of most major industrial nations.

As our economy has weakened, economists, planners, and policymakers have tried to develop solutions to these problems. There is considerable disagreement as to the existence, the definition, and the extent of deindustrialization in the U.S. One group argues that our problems stem from severe structural changes in our economy (deindustrialization) and that it is necessary to develop a national industrial policy to correct these structural problems.[2] Others argue that cyclical problems and a highly overvalued dollar are responsible for most of our problems.[3] Those who hold this view believe that a national industrial policy to correct structural problems offers little help and may cause serious problems.

In a recent paper, Barry Bluestone agrees that the data show manufacturing output increasing faster in the U.S. than in most industrialized countries from 1973-1980. He agrees that data on capital expenditures in manufacturing between 1973 and 1979 and evidence on employment for 1973-1980 call into question deindustrialization. Bluestone argues, however, that these *aggregate* data are "inadequate to prove or disprove deindustrialization if interindustry and interregional worker mobility is insufficient to clear labor markets. What counts in an economy where mobility is imperfect are the trends in *specific* industries and regions."[4] Bluestone continues to push for change.

It is quite possible that the national data hide pockets of significant deindustrialization.

Like Professor Bluestone, we believe it is quite possible that the national data hide pockets of significant deindustrialization. We utilize national data in our regressions for comparison purposes, but the focus of our study is the economy of the Great Lakes region and the economies of the five individual states (Illinois, Indiana, Michigan, Ohio, and Wisconsin) that make up that region.

In our analysis, we compare the economy of the Great Lakes region with the U.S. economy, using as a dependent variable the real value added in manufacturing. In these comparisons, we use U.S. real Gross National Product, time, and time squared as independent variables.

In the second section we examine the economies of each of the five states in the Great Lakes region. In this section we again use real value added manufacturing as the dependent variable and U.S. real GNP, time, and time squared as independent variables. Finally, we regress each state's manufacturing output against manufacturing output in the remainder of the region and real GNP *outside* the Great Lakes region. This regression attempts to determine the relative importance of the U.S. economy versus the regional economy on the manufacturing activity in the individual states.

Deindustrialization of the Great Lakes Region: Regression Results

At the basis of the deindustrialization myth case is an econometric relationship between manufacturing output and real GNP. As Robert Lawrence writes:

> The relationship between the growth of manufacturing and the overall growth of the economy can be summarized quite well by using standard econometric analysis. The results show that industrial performance is a magnification of performance in the overall economy: if GNP grows at 1.7 percent per year, there will be no increase in manufacturing production. But for each percentage point increase (decrease) of GNP growth above (below) 1.7 percent, manufacturing output will rise (fall) by 2.2 percentage points. The analysis shows that, based on the estimates from 1960 to 1973, one can forecast industrial production for the period 1973 to 1982, taking actual GNP as given, with remarkable accuracy.[5]

In this section, we apply this same econometric procedure to data for the Great Lakes region.

Our regressions, reported in **Table 1**, show that the relationships between value added in manufacturing and real Gross National Product differ significantly for the national and for the Great Lakes economies. The regression coefficients for the

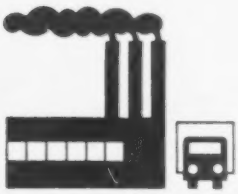
1. Ira Magaziner and Robert Reich, *Minding America's Business* (New York: Harcourt Brace Jovanovich, 1982): 12.

2. See Barry Bluestone and Bennett Harrison, *The Deindustrialization of America* (New York: Basic Books, 1982); Magaziner and Reich (note 1); and Ronald Muller, *Revitalizing America* (New York: Simon and Schuster, 1980).

3. Lawrence Kline, "Identifying the Effects of Structural Change" (pp. 1-21); Paul R. Krugman, "Macroeconomic Policy under Structural Change" (pp. 123-57); and Robert Z. Lawrence, "Changes in U.S. Industrial Structure: The Role of Global Forces, Secular Trends, and Transitory Cycles" (pp. 29-79) in *Industrial Change and Public Policy: A Symposium Sponsored by the Federal Reserve Bank of Kansas City*, August 1983.

4. Barry Bluestone, "Economic Turbulence: Capital Mobility vs Absorptive Capacity in the U.S. Economy," a paper presented at the 1983 meetings of the American Association for the Advancement of Science, Detroit, Michigan, May 29, 1983: 8.

5. Lawrence (note 3): 37.



percentage change in real GNP (PCRGNPX) and for the natural log of real GNP (LRGNPX) are elasticities indicating the percentage change in manufacturing value added resulting from a one percentage change in real GNP.

While manufacturing output varies on a one-to-one basis with overall activity in the U.S. economy, manufacturing output is a magnification of overall activity in the Great Lakes region.

For both time periods (1947-1972 minus 1948, and 1947 to 1980 minus 1948 and 1979—no data exist for 1948 and 1979), the regression coefficients for real GNP for the national economy are very close to 1, while the regression coefficients for real GNP for the Great Lakes economy are close to 2.5. This suggests that, while manufacturing output varies on a one-to-one basis with overall activity in the U.S. economy, manufacturing output is a magnification of overall activity in the Great Lakes region.

We have to accept the fact that at least some part of what is termed deindustrialization and is generally attributed to foreign competition or other exogenous factors is instead a consequence of the sluggish performance of the overall national economy during the 1970s. Indeed, due to the Great Lakes region's greater sensitivity to real GNP changes, the manufacturing decline accounted for by this sluggish overall performance is greater than that experienced nationally.

Nonetheless, there appears to be more to the decline in manufacturing output for the Great Lakes region than just this cyclical effect. The latter half of the 1970s showed very strong growth in real GNP. If the magnification effect were the factor influencing manufacturing output, then the share of manufacturing output in real GNP should have increased as it did during the expansion of the 1960s. In fact, during the period 1976 to 1979, that share declined for the Great Lakes region and for each of the states in that region.

A first hint that such other factors exist surfaces in the constant terms of equations 1, 2, 3, and 4 of Table 1, where we have regressed the percentage annual growth rate of real manufacturing value added against the annual percentage change in GNP. The constant term in each equation shows the impact that factors other than real GNP had on manufacturing output behavior.

The negative signs on these terms (only equation 1 has a positive term) and the statistical significance of the constants in the third and fourth equations for the Great Lakes region imply the existence of forces depressing manufacturing output below those levels accounted for by changes in real GNP. Such effects are larger for the Great Lakes region than they are for the United States, regardless of time period. In addition, the size of this negative factor increases (by about 50% for equations 3 and 4 and by about 36% for equations 7 and 8) for the Great Lakes region when the years 1973 to 1980 are included in the data sample.

This result contradicts Lawrence's conclusion. It implies that there are factors other than cyclical effects accounting for some of the poor performance in manufacturing output. It implies further that these other factors became increasingly important during the period 1973 to 1979.

Those equations in Table 1 that include time and time squared as explanatory variables yield results that are generally supportive of deindustrialization, especially in the Great Lakes region. The time variables for the U.S. are not significant, and only

Table 1
Regression Results: Relating Real Value Added in Manufacturing at the National and Regional Levels

No.	Dependent variable	Independent variables: Constant	PCRGNPX	LRGNPX	TIME	TIMESQ	R^2	DW	TIME
1	PCRUSVA	1.8	.94				.09	1.77	72
		(.5)	(1.8)						
2	PCRGL	- .63	1.05				.07	1.82	80
		(.2)	(1.8)						
3	PCRGL	-5.27	2.41				.51	1.62	72
		(2.4)	(5.0)						
4	PCRGL	-7.93	2.76				.46	1.59	80
		(3.3)	(5.1)						
5	LRUSVA	-2.61		1.21	-.008	-.0001	.98	.23	72
		(1.2)		(3.2)	(.65)	(.72)			
6	LRUSVA	-3.72		1.39	.025	-.0010	.96	.87	80
		(1.2)		(2.6)	(1.5)	(6.1)			
7	LRGLVA	-10.0		2.22	-.038	-.0001	.98	.38	72
		(5.5)		(7.4)	(3.4)	(.87)			
8	LRGLVA	-13.6		2.80	-.043	-.0008	.97	1.02	80
		(6.0)		(7.5)	(2.9)	(6.2)			

PCRUSVA = percentage change in real U.S. value added by manufacturers.
PCRGL = percentage change in real Great Lakes region value added by manufacturers.
LRUSVA = natural log of real U.S. value added by manufacturers.
LRGLVA = natural log of real Great Lakes region value added by manufacturers.
PCRGNPX = percentage change in real GNP, minus real value added by manufacturers in region specified in dependent variable.
LRGNPX = natural log of real GNP, minus real value added by manufacturers in region specified in dependent variable.
DW = Durbin Watson statistic, which measures the extent to which the prediction error in one year is correlated with that in the preceding year.
Figures in parentheses are t-values. A t-value greater than 2 provides a high level of confidence that a variable has a statistically significant impact on the dependent variable.

one of the two is negative. In the equations for the Great Lakes region, however, both time variables are significant and both are negative. The results for the time squared variables are mixed. They are negative in all four cases, but only one of these variables is significant in the equations for the U.S., and only one is significant in the equations for the Great Lakes region. Finally, the equations including 1973 to 1980 data have negative time and time squared variables, and three of these four variables are significant.

Thus, manufacturing in the Great Lakes region suffered doubly during the decade of the 1970s. It suffered from its relatively greater sensitivity to the performance of the overall economy, and it suffered from a relatively greater adverse impact from those factors captured in time regressors.

In general, this comparison of the Great Lakes region to the United States with respect to these time terms reveals that the manufacturing output of the Great Lakes region is more adversely affected by the factors being captured by these time trends than is that of the United States. Thus, manufacturing in the Great Lakes region suffered doubly during the decade of the 1970s. It suffered from its relatively greater sensitivity to the performance of the overall economy, and it suffered from a relatively greater adverse impact from those factors captured in time regressors.

As a final piece of evidence, we use the 1947-1972 regressions for real value added in manufacturing to project the level of manufacturing output as a function of real GNP and time for the period 1973 to 1980 (excluding 1979). A comparison of the estimated output in manufacturing to its actual level in each period indicates whether the period since 1973 is simply a reflection of trends that were evident during the 1950s and 1960s or whether it is a break with the past that signals an increasingly deteriorating situation in the manufacturing sector.

Table 2 contains data on the difference between actual and estimated real value added in manufacturing. A positive difference indicates that, based on the period 1950-1972, actual manufacturing output exceeded that forecast by the regression. A negative value signifies that the opposite occurred.

Our calculations based on real value added indicate some erosion in the U.S. manufacturing position over the period 1973 to 1980. As Table 2 shows, the actual levels of real value added in manufacturing were generally below the forecasts by 10 to 30%, except for 1973 and 1980. The shortfall in 1980 is 45%. Such shortfalls are consistent with our findings of increased negativity in the intercepts and time variables in our regressions.

Evidence of the erosion of the manufacturing base in the Great Lakes region is also seen in Table 2. Actual output is not only *lower* than what we would expect based on our forecasting equation, but the magnitude of the shortfall *increases* for the Great Lakes region for the years 1977, 1978, and 1980. When compared with the U.S. economy, however, the shortfalls are slightly lower than those for the U.S. throughout the period 1973-1980.

Deindustrialization of the Great Lakes States

Regression equations similar to those estimated for the Great Lakes region are given in **Table 3** for Illinois, Indiana, Michigan, Ohio, and Wisconsin. Coefficients for the

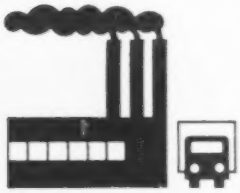
Table 2
Actual Minus Forecasted Value Added in Manufacturing for the United States and the Great Lakes Region

Region	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1980*
U.S.	-3%	-14%	-30%	-27%	-26%	-28%	-45%
Great Lakes Region	-1	- 9	-20	-15	-16	-18	-41

Table 3
Value Added by Manufacturers in Individual States as a Function of the Overall Level of Economic Activity, Time, and Time Squared

State	*Constant*	*LRGNPX*	*TIME*	*TIMESQ*	R^2	*DW*	*F*
Illinois	-10.89	2.12	-.02	-.0007	.96	.60	275
	(5.4)	(6.4)	(1.8)	(5.3)			
Indiana	-15.31	2.71	-.04	-.0006	.98	1.07	425
	(7.8)	(8.5)	(3.0)	(5.4)			
Michigan	-21.16	3.77	-.08	-.0007	.93	1.32	135
	(6.9)	(7.5)	(4.0)	(3.6)			
Ohio	-14.24	2.67	-.04	-.0008	.98	1.27	474
	(8.8)	(10.0)	(3.4)	(8.3)			
Wisconsin	- 9.82	1.77	-.02	-.0004	.99	1.11	781
	(7.2)	(8.0)	(1.8)	(4.1)			

The dependent variable is the natural log of real value added by manufacturers in the state under consideration.
LRGNPX = natural log of real GNP minus the value added by manufacturers in the state under consideration.
DW = Durbin-Watson statistic, which measures the extent to which the prediction error in one year is correlated with that in the preceding year.
F = F-value, a ratio of the variance in the dependent variable accounted for by the model to the variance in the dependent variable accounted for by factors outside the model. A higher F-value indicates a more powerful model.
Figures in parentheses are t-values. A t-value greater than 2 provides a high level of confidence that a variable has a statistically significant impact on the dependent variable.



independent variables (for example, 2.12 for LRGNPX for Illinois) are again elasticities measuring the percentage change in real value added in Illinois manufacturing for each one percent change in the independent variable.

A comparison of results in Tables 1 and 3 does not reveal any major differences between the behavior of the Great Lakes region as a whole and the behavior of the individual states that comprise that region. Manufacturing output in all of the Great Lakes states is highly sensitive to national business conditions. In addition, all of the equations in Table 3 reveal a significant negative trend in manufacturing value added. After controlling for the impact of national business conditions, value added in manufacturing for all five Great Lakes states has declined over time, with this decline worsening in later years.

As in the case of the Great Lakes region, our results lead us to reject the argument that the decline in the manufacturing sectors of Illinois, Indiana, Michigan, Ohio, and Wisconsin is explained entirely by the slow growth of real GNP. The magnification effect that should have happened in the late 1970s never transpired.

Table 4 confirms this result. It shows the actual growth rates in manufacturing output and the expected growth of manufacturing output based on growth of real GNP for the years 1973-1978 and 1980. Indeed, manufacturing output in all of the Great Lakes states declined in 1980, while the national economy continued to expand. Had the magnification effect worked, Michigan would have had an 11% increase in its manufacturing output in 1980 instead of experiencing a 33% decline.

As previously mentioned, our comparison of Tables 1 and 3 for the Great Lakes region and for the state of Indiana raises this question: Is deindustrialization in Indiana due primarily to a decline in the Great Lakes markets that Indiana depends on to sell its goods? Equations 1 through 4 in **Table 5** shed light on this question.

Casual observation suggests that much of Indiana's manufacturing output is sold to other Great Lakes states. Consequently, the impact of the national economy on Indiana manufacturing may be predominantly an indirect one. To separate direct from indirect effects, we regress real value added in Indiana manufacturing against real value added in manufacturing in the Great Lakes region, LRGLVAX, and real GNP, LRGNPX. The measure of value added for the Great Lakes region, LRGLVAX, excludes Indiana. The measure of real GNP, LRGNPX, excludes that part of real GNP attributable to value added in manufacturing in the Great Lakes region. Coefficients for the independent variables (for example, 2.71 for LRGNPX) are elasticities measuring the percentage change in real value added in Indiana manufacturing for each one percent change in the independent variables.

Our findings, based on equations 1 through 4 in Table 5, confirm that much of the impact of the national economy on In-

Table 4
Actual Growth of Real Value Added by Manufacturers
Versus Growth Based on Changes in Rate of National Economic Growth

Region & year	*Actual growth in mfg. output*	*Expected growth in mfg. output based on growth in RGNPX**	*Difference: actual less expected*
U.S			
1973	7.29%	6.35%	.94%
1974	- 8.67	2.59	-11.26
1975	-12.30	4.99	-17.29
1976	8.68	10.03	1.35
1977	6.96	6.18	.78
1978	4.67	6.21	- 1.54
1980	-10.30	7.28	-17.58
Great Lakes			
1973	7.65%	12.48%	- 4.83%
1974	-11.12	.40	-11.52
1975	-14.66	- .53	-14.13
1976	11.65	11.19	.46
1977	6.26	12.12	- 5.86
1978	3.98	11.32	- 7.34
1980	-20.87	8.72	-29.59
Illinois			
1973	6.35	12.20	- 5.85
1974	- 8.60	-1.03	- 7.56
1975	-12.09	-2.10	- 9.99
1976	5.59	11.46	- 5.87
1977	4.36	11.71	- 7.36
1978	3.75	10.71	- 6.95
1980	-14.13	5.75	-19.88
INDIANA			
1973	8.62	15.55	- 6.93
1974	- 9.95	-1.46	- 8.49
1975	-18.87	-2.74	-16.13
1976	15.34	14.45	.89
1977	6.29	14.91	- 8.62
1978	5.40	13.62	- 8.22
1980	-20.18	7.20	-27.38
Michigan			
1973	8.84	21.55	-12.70
1974	-20.66	-1.08	-19.58
1975	-15.39	-3.70	-11.69
1976	22.58	19.62	2.96
1977	8.43	20.61	-12.18
1978	3.68	19.04	-15.35
1980	-33.06	11.16	-44.22
Ohio			
1973	7.44	15.31	- 7.87
1974	- 7.86	-1.31	- 6.55
1975	-17.10	-2.36	-14.74
1976	9.02	14.29	- 5.27
1977	7.03	14.64	- 7.61
1978	3.10	13.52	-10.42
1980	-19.74	7.52	-27.27
Wisconsin			
1973	7.35	10.19	- 2.84
1974	- 5.14	-1.07	- 4.07
1975	- 6.98	-2.02	- 4.96
1976	7.72	9.55	- 1.83
1977	4.15	9.76	- 5.61
1978	5.56	8.90	- 3.34
1980	-13.62	4.53	-18.16

* The expected growth rates were calculated by multiplying the actual percentage change in RGNPX times the coefficients for LRGNPX in Table 3.
RGNPX = real GNP minus value added by manufacturers of the region or state for which the expected growth in manufacturing output is calculated.
LRGNPX = the natural log of RGNPX.

diana value added in manufacturing is indirect. The direct impact of real GNP on Indiana's manufacturing output falls far below that given in equation 1. Further, the elasticities on Great Lakes value added in equations 2 through 4 are fairly close to one. Consequently, whatever effect the national economy exerts on the Great Lakes region's manufacturing activity, Indiana's manufacturing output will have a tendency to mirror that same effect. A 1% decline in real GNP, for instance, results in a decline in Indiana manufacturing value added of 2.2% to 2.8%. More than 95% of this decline can be attributed to the fall in manufacturing output in the other Great Lakes states.

Most of the negative trend effect present in equation 1 is also indirect. We have noted that, in the period 1973 to 1980, the growth of real value added in Indiana manufacturing was about 10% below what would have been expected based on the growth rate of real GNP. That -10% is accounted for by the time trend variables given in equation 1. Equation 4 in Table 5 contains the direct impact of these time trends after eliminating indirect trends transmitting their impact on Indiana manufacturing through variable LRGLVAX.

A comparison of equations 1 and 4 indicates the following:

- The linear trend effect in equation 4, given by the coefficient on TIME of 0.005, is positive but only about one-eighth the comparable coefficient in equation 1.
- The non-linear trend effect, given by TIMESQ, is positive in equation 4 while negative in equation 1.

Based on these findings, we conclude that, after controlling for the indirect trend effect and other effects, there remains virtually no direct trend in Indiana's manufacturing value added. In other words, when the impacts of the regional and national economies are accounted for, there is no trend unique to Indiana.

We have calculated the relative importance of these direct and indirect trend effects. From 1976 through 1980, the total trend effect, direct plus indirect, is between -7.66% and -8.14%. The direct part of that trend ranges from 0.62% to 0.64%. Since the direct part of the trends is positive, the indirect effect of negative time trends, which transmit their impact to Indiana value added in manufacturing through value added in the Great Lakes region, accounts for more than 100% of the total negative trend experienced by Indiana's manufacturing output. For example, if the total trend effect is -7.66% and the direct part of the trend effect is + .62%, then the indirect portion of that trend is -8.28%; therefore, the indirect effect equals 108% of the total trend effect.

Table 5
Regression Results: Value Added in Manufacturing in Indiana
(with LRINVA the dependent variable for all equations)

	Independent variables						
No.	*Constant*	*LRGNPX*	*LRGLVAX*	*TIME*	*TIMESQ*	R^2	*DW*
1	-15.31	2.71		.04	-.0006	.98	1.1
	(7.8)	(8.5)		(3.0)	(5.4)		
2	- 2.86	.16	.99			.99	1.7
	(34.1)	(5.5)	(30.7)				
3	- 2.04	.009	1.01	.005		.99	1.8
	(2.1)	(.05)	(25.0)	(.86)			
4	- 1.83	-.035	1.03	.005	.00002	.99	1.8
	(1.6)	(.16)	(16.2)	(.88)	(.35)		

LRINVA = the natural log of real value added by manufacturers in Indiana.
LRGNPX = the natural log of real gross national product minus value added by manufacturers in the Great Lakes region.
LRGLVAX = the natural log of value added by manufacturers in the Great Lakes region minus value added by manufacturers in Indiana.
DW = Durbin-Watson statistic, which measures the extent to which the prediction error in one year is correlated with that in the preceding year.

Figures in parentheses are t-values. A t-value greater than 2 provides a high level of confidence that a variable has a statistically significant impact on the dependent variable.

Our conclusions based on the regression analysis of Indiana are essentially those given for the Great Lakes region. The regressions for Indiana do not support the contention that deindustrialization is a by-product of a stagnant national economy. Magnification effects that should have swelled manufacturing output during the late 1970s never materialized in Indiana. Our calculations for this period show that, on the average, real Indiana value added in manufacturing fell 8% below the level predicted based on growth in the national economy.

Indiana's deindustrialization appears to be more a consequence of its dependence on Great Lakes markets than of anything unique to Indiana. Neither national business conditions nor trends have very large direct effects on Indiana, and the effects that are present are positive rather than negative. Because of Indiana's dependence on markets in Illinois, Ohio, Michigan, and Wisconsin, deindustrialization in Indiana simply mirrors the deindustrialization taking place in these states.

What Does It Mean?

The results of our research clearly indicate that deindustrialization is occurring in the Great Lakes region as a whole, as well as in each of the states that make up the region, including Indiana. However, our research does not allow us to identify why this deindustrialization is occurring, although there are several possibilities.

The industry mix may be at the heart of the problem. The region contains several industries that are finding it increasingly hard to compete with foreign firms. Steel and automobiles are just two examples. It is possible that if this region had the same industrial mix as the rest of the nation, it would not be experiencing deindustrialization.

Another possibility is that plants located in the Great Lakes region tend to be older than plants located in other parts of the nation. To the extent that they do not con-

tain the latest technological innovations, these plants may not be able to compete with newer plants in the United States and around the world.

It is also possible that wages are significantly higher in this part of the country, and that firms employing workers at these higher rates are not able to compete successfully with similar firms located in sections of the country (and around the world) where wages are substantially lower. Our initial research on this particular problem, however, leads us to conclude that relative wage differentials are probably not an important cause of the region's manufacturing difficulties.

It is also possible that wages are significantly higher in this part of the country, and that firms employing workers at these higher rates are not able to compete successfully with similar firms located in sections of the country (and around the world) where wages are substantially lower.

Another possibility is that, while wages themselves are not an important cause of the region's problems, unionization of the manufacturing labor force may be significant. It is widely known that workers in the manufacturing sectors of such states as Michigan, Ohio, and Indiana are highly unionized, in unions that tend to be some of the most powerful in the country. It is possible that, as these unions have attempted to secure better working conditions for their members, certain inefficiencies have been built into the environment in which firms in this region must operate. This could result in area firms operating at a disadvantage compared with firms in less unionized parts of the United States and the rest of the world.

If future research is able to identify the cause of the deindustrialization occurring in the region, it may very well be a combination of factors. Some we have mentioned; some we have yet to identify. □

Aiming for Growth in Indiana's Manufacturing Sector: A Targeted Industry Approach

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As the current economic recovery continues to mature and age, a question comes to mind: What should Indiana be doing to soften the effects of any future recession? To answer this question, it is necessary to identify the underlying structural features that cause Indiana's economy to suffer more during recessions than does the nation as a whole. Just such direction is provided in two articles that have appeared recently in the *Indiana Business Review* (*IBR*): one by William Ritteman[1] and the other by Yochanan Shachmurove.[2]

Ritteman performed an aggregate analysis to study the effects of the industrial mix on this state's employment growth from 1960 to 1981. Comparing Indiana actual end-of-period employment to Indiana employment adjusted to reflect U.S. industrial mix patterns, Ritteman examined the impact of the state's industrial mix on the economy's business cycle. He did this by subdividing the period 1960-1981 into four periods of recession and four periods of expansion.

Ritteman found that, had Indiana's industrial mix been similar to the nation's as a whole, Indiana would have lost, on average, 56% fewer jobs during the four periods of recession. However, while Indiana's industrial mix played a major role in job losses during periods of recession, it did not provide an equal and opposite effect to stimulate employment growth during periods of economic expansion. Over the four periods of expansion, Indiana enjoyed an average growth in jobs of only 5.4% due to industrial mix. Because Indiana's employment gains during economic expansions were insufficient to offset employment losses during economic downturns, Ritteman concluded that a second factor, differential intra-industry growth rates at the state and national levels, also played an important role.

Shachmurove extended this analysis by looking at 24 sectors of the economy to examine the relationship between state and national employment levels. Noting that manufacturing in Indiana represented 41% of the state's earned income in 1979, compared to only 26% nationally, Shachmurove reiterated the problems caused by Indiana's procyclical industrial mix. Supporting Ritteman's hypothesis that differing intra-industry growth rates at the state and national level are hurting Indiana's economy, Shachmurove stated:

> Indiana has become more dependent on the manufacturing sector. Industries in which Indiana specializes, such as primary metals and transportation equipment, are below the U.S. average growth rate in manufacturing in the last decade.[3]

Targeting Industries

These studies make clear the answer to the question, "What should Indiana be doing?" This state must diversify its industrial base. Furthermore, diversification must be achieved by targeting industries that:

- Have good growth potential;
- Are minimally vulnerable to recession; and
- Would have a significant community economic impact.

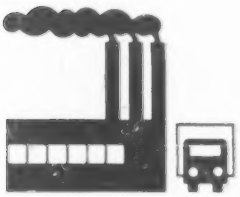
Given the above criteria, this article seeks to identify the manufacturing industries that Indiana should target for location or expansion within the state.

To be as specific as possible in identifying industrial candidates, the initial analysis examined industries at the four-digit Standard Industrial Code (SIC) level. In order to narrow the hundreds of listed industries to a manageable level, Indiana Department of Commerce calculations for

1. William Ritteman, "Indiana Employment Growth, 1960-1981: An Examination of the Industrial Mix Hypothesis," *Indiana Business Review*, July-August 1984: 2-9.

2. Yochanan Shachmurove, "Changes in the Dependence of State Employment in the Last Decade: Some Evidence," *Indiana Business Review*, March-April 1985: 8-13.

3. Shachmurove (note 2): 10.



U.S. employment growth rates from 1972-1981 were reviewed.[4] In one study, an initial minimum screening criterion of 25% national employment growth during those years was used to derive a list of 66 industries. Because detail specific to Indiana was not available for all 66 industries at the four-digit SIC level, data at the three-digit level were used when four-digit data were lacking. This reduced the initial list from 66 to 56 industries.

These 56 industries were then subjected to an analysis of 12 different indicators, which were grouped into the three categories mentioned above:

1. Economic growth potential;
2. Relative invulnerability to recession (recession-proof); and
3. Significant local economic impact

These "factor" measures of economic performance, and the rationale for using them, are as follows.

Growth Potential

1. The national percentage point growth in constant 1981 dollar value of shipments generated per employee from 1972 to 1977 in each of the SICs analyzed. *Rationale:* The increase in value of shipments per em-

4. U.S. Department of Commerce, International Trade Administration, *U.S. Industrial Outlook 1985*, January 1985: 5-15.

Table 1
Targeted Industry Factor Scores

		Growth Potential					*Recession Proof*				*Economic Impact*		
		1*	2*	3*	4†	5†	6*	7†	8†	9†	10*	11†	12†
SIC	Industry	U.S. Annual Growth 1972-77 $/Emp.	U.S. Annual Growth 1977-1981 $/Emp.	Indiana Actual vs. Potential Emp. Growth 1972-77	Indiana Actual vs. Potential Emp. Growth 1977-81	Indiana Regional Share (%) 1977-81	% Annual Margin Change 1977-81	Indiana Industrial Mix (%) 1977-81	U.S. % Emp. Growth 1981-82	Indiana-U.S. % Emp. Growth 1981-82	U.S. $ per employee 1981	1981 Location Quotient	% Growth Location Quotient 1977-81
2016	Poultry dressing plants	2.5%	-1.72%	-31.9%	-58.0%	-32.2%	-4.1%	-25.5%	-6%	9.9%	$85.1	56%	-37.8%
209	Misc. food & kind products	6.1	-1.71	-18.9	—	—	-7.3	—	—	—	209.0	—	—
233	Women's outerwear	1.2	-1.9	-40.9	-55.0	-132.3	-3.1	-44.8	2.7	13.0	36.3	.08	-52.9
2339	Women's outerwear, n.e.c.	2.5	-2.7	-46.8	-86.0	-389.7	-5.1	-94.3	3	123.7	39.0	.37	-80.6
2448	Wood pallets & skids	3.6	-2.5	-2.0	-.8	31.0	-5.8	-13.3	-9.3	0.0	42.9	1.61	11.0
2521	Wood office furn.	4.7	.9	18.0	-18.5	25.8	-3.6	-14.31	10.6	1.1	54.7	5.69	-2.4
259	Misc. furniture & fixtures	2.3	2.2	530.4	15.5	25.5	-1	-14.34	14.2	7.7	65.4	2.04	27.5
26	Paper & allied products	5.8	2.5	4.5	-2.5	1.2	-3.1	-19.1	-4.2	-4.9	126.2	.89	8.5
2647	Sanitary paper products	5.3	3.8	-92.7	185.3	66.9	-1.5	-6.3	1.2	113.1	228.0	.21	208.8
2649	Converted paper products	3.5	2.0	-37.0	-20.3	-9.0	-1.4	-21.0	-12.5	30.2	86.3	1.40	-6.7
275	Commercial printing	2.1	-.6	—	-6.0	20.7	-2.7	-15.3	5.2	11.4	58.1	.79	6.8
2782	Blankbooks & looseleaf binders	2.6	.9	-19.5	-18.7	17.5	-1.6	-15.9	-.8	-5.5	50.4	.62	-3.1
2791	Typesetting	.7	-4.2	-4.6	7.1	21.3	-4.9	-15.1	6.9	14.6	31.1	.897	18.4
2795	Lithographic platemaking	1.7	2.1	29.0	39.5	55.2	.4	-8.5	1.5	-28.9	65.8	.54	35.0
2819	Industrial inorganic chem.	5.6	-.5	26.5	202.7	69.44	-5.8	-5.9	.9	-54.2	148.9	.60	215.8
283	Drugs	1.1	1.2	-15.5	-5.8	4.6	.1	-18.4	—	—	131.5	3.50	2.9
2833	Medicinals & botanicals	70.4	.9	—	.2	4.9	-40.8	-18.3	10.7	123.3	187.8	1.96	12.0
287	Agricultural chemicals	9.9	3.8	-23.0	5.8	5.5	-5.6	-18.2	-7.3	22.0	294.3	1.33	18.8
2992	Lubricating oils & greases	5.6	2.3	—	81.0	56.4	-3.1	-8.3	3.6	-66.0	241.2	.49	88.4
307	Misc. plastic products	3.9	2	—	-16.7	.4	-3.5	-19.2	-3.9	4.7	72.7	1.60	-5.9
3324	Steel investment foundries	3.5	2.8	6.3	73.3	58.6	-.7	-8.0	-11.1	-46.0	59.7	4.50	62.9
3399	Primary metal products	6.2	11.4	-73.9	-2.2	33.7	4.9	-12.8	-9.7	-39.4	177.2	1.60	8.8
3448	Prefab. metal bldg.	2.8	-1.3	-135.9	-36.0	5.8	-4.0	-18.19	-8.6	2.8	102.4	1.17	-17.6
3479	Metal coating, allied ser.	7.0	9.5	37.5	-12.6	3.3	2.4	-18.65	-.2	.2	98.7	2.60	-1.0
3494	Valves & pipe fittings	3.5	-2.9	7.3	13.4	21.8	-6.2	-15.1	1.3	13.8	63.9	1.10	27.9
3498	Fabricated pipe & fittings	3.4	.04	-77.8	68.4	52.3	-3.2	-9.1	3.2	96.8	91.7	.52	67.7
353	Construction machinery	4.8	2.5	19.3	1524.0	94.1	-2.2	-1.1	-6.8	-1.0	108.0	.71	1320.0
3535	Conveyors & conveying equipment	3.0	.6	479.0	335.1	78.6	-2.3	-4.2	-2.4	-11.3	81.3	-.87	335.0

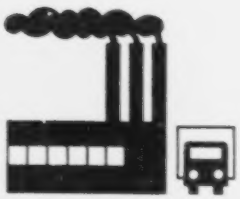


Table 1 (continued)
Targeted Industry Factor Scores

		Growth Potential					*Recession Proof*				*Economic Impact*		
		1*	2*	3*	4†	5†	6*	7†	8†	9†	10*	11†	12†
SIC	Industry	U.S. Annual Growth 1972-77 $/Emp.	U.S. Annual Growth 1977-81 $/Emp.	Indiana Actual vs. Potential Emp. Growth 1972-77	Indiana Actual vs. Potential Emp. Growth 1977-81	Indiana Regional Share (%) 1977-81	Annual. Margin % Change 1977-81	Indiana Industrial Mix (%) 1977-81	U.S. % Emp. Growth 1981-82	Indiana-U.S. % Emp. Growth 1981-82	U.S. $ per employee 1981	1981 Location Quotient	% Growth Location Quotient 1977-81
3541	Metal-cutting mach. tools	4.7%	4.8%	42.3%	35.6%	38.0%	.2%	- 12.0%	- 11.2%	26.0%	$78.9	.899%	45.2%
3544	Special tools & dies	1.3	- .2	2.2	9.9	20.6	- 1.5	- 15.3	- 2.1	- 11.5	50.4	2.61	21.4
3545	Mach. tool accessories	3.4	1.8	42.3	9.9	15.2	- 1.5	- 16.4	- 5.1	35.7	65.3	.78	5.4
3549	Metalworking mach.	1.5	.3	70.4	1.5	30.8	- 1.1	- 13.4	- 6.6	- 6.3	66.0	1.80	12.3
3555	Printing machinery	1.9	.4	—	8.3	30.8	- 1.4	- 13.5	- 3.9	6.1	74.5	.31	19.2
3569	Gen. industr. mach.	1.8	1.5	- 17.9	- 26.9	18.5	- .3	- 15.7	- 1.4	- 8.7	70.6	.81	8.0
357	Office & computing mach.	2.4	2.2	63.1	157.8	69.43	- .2	- 5.9	1.3	58.2	97.6	.05	108.3
3573	Electronic computing equipment	1.4	2.0	—	42.4	- 56.1	.5	- 8.6	- 1.3	98.6	99.9	.03	50.0
358	Refrigeration & serv. machinery	1.0	.1	- 3.3	- 29.2	- 25.8	- 1.0	- 24.3	- 11.0	- .1	89.5	1.23	- 21.2
3599	Machinery, except elec.	1.3	.2	—	—	—	- 1.1	—	4.1	7.7	48.2	.92	—
3622	Industrial controls	3.1	1.4	79.1	- 79.9	- 225.5	- 1.6	- 62.8	2.1	208.2	66.2	.362	- 70.0
366	Communication equip.	3.4	.7	- 15.8	- 18.5	10.2	- 2.6	- 17.3	7.3	- 17.9	70.2	1.09	- 5.2
367	Electronic components	2.3	1.5	- 39.4	- 48.1	- 58.6	- .8	18.2	4.9	- 13.8	60.4	1.00	- 29.6
3675	Electronic capacitators	2.6	3.4	- 61.8	6.0	3.5	.8	- 18.7	1.6	- 1.6	40.5	1.21	18.6
3676	Electronic resistors	1.3	- .8	- 30.4	- 21.4	- 21.4	- 2.1	- 23.4	- 9.9	- 31.4	36.2	6.25	- 19.5
3678	Electronic connectors	2.6	2.9	- 90.3	61.3	54.9	.3	- 8.8	- 5.5	5.5	65.5	.44	57.1
3679	Electronic components n.e.c.	.8	- .4	—	- 36.7	6.5	- .8	- 225.1	14.3	33.3	60.6	.50	- 18.0
369	Misc. electronic equipment	3.2	- .6	- 33.9	- 23.8	- 23.8	- 3.6	- 23.9	.9	- 14.7	78.8	5.00	- 21.9
3693	X-ray machinery	3.5	- 2.1	—	100.0	19.8	- 5.5	- 15.7	19.2	- 20.0	77.2	.14	- 39.1
376	Guided missiles	2.3	1.7	- 16.2	3.4	3.4	- .6	- 18.9	13.8	- 13.8	81.2	.05	0.0
3769	Space vehicle equipment	- 2.2	5.4	104.9	44.6	44.6	7.7	- 10.9	44.4	- 44.4	80.1	.55	175.0
379	Misc. trans. equipment	3.5	2	9.0	- 10.8	- 106.8	- 3.2	- 39.9	- 2.8	- 3.8	88.8	6.88	- 9.9
382	Measuring & controlling devices	1.6	2.2	15.9	1.6	19.5	.6	- 15.5	4.0	- 6.2	59.5	.96	12.9
3823	Process control instruments	4.6	2.3	69.4	197.5	5.7	- 2.3	- 6.1	12.6	124.8	65.5	.27	200.0
3825	Instruments to measure electricity	1.0	1.5	- 13.0	49.4	43.5	.4	- 10.9	14.5	- 5.8	60.6	1.14	56.2
3832	Optical instruments & lenses	—	—	—	470.5	84.8	—	- 2.9	- 4.1	95.9	—	.363	350.0
384	Medical instruments	1.1	1.5	—	- 28.3	- 14.5	.4	- 22.1	2.0	- 4.3	67.2	1.20	- 16.7
395	Pens, pencils, office supplies	3.4	2.6	- 25.3	- 11.6	- 8.9	- .8	- 21.0	- 3.1	- 19.7	74.0	.45	- 2.2

* The data source for 1972 and 1977 was the *1977 Census of Manufactures*. For 1981, the *1981 Annual Survey of Manufactures* was used.
† The data source for these economic factors was, depending on the year in question, the 1977, 1981, or 1982 edition of *County Business Patterns*. Because the actual data collection was performed before the 1982 Census of Manufactures became available, it was necessary to use *County Business Patterns* as the source for these data. Also, because SIC definitions used for *County Business Patterns* were changed in 1974 and 1975, that source could not be used in all cases.
Note: In cases where rounding to the first digit would have resulted in a tie, figures have been carried to two decimal places for ranking purposes. (See, for example, SIC 2521 and 259 for Factor 7.)

ployee indicates the industry's ability to increase worker productivity.

2. The same measure for the period 1977-1981.

3. The percentage point difference between Indiana employment 1972-1977 growth and U.S. employment growth in the same period.
(An example:
national growth = −10%;
Indiana growth = 5%;
the difference = 5 − (−10) = 15%.)
Rationale: This measure compares Indiana employment growth with U.S. employment growth on a percentage point basis.

4. The same measure for the period 1977-1981.

5. The regional share of absolute 1977-1981 Indiana employment growth as a percentage of 1981 employment. *Rationale*: This measure demonstrates an industry's ability to generate employment growth by increasing its regional share of total U.S. employment growth.

Relative Invulnerability to Recession

6. The annualized inflation-adjusted marginal rate of change in the national 1972-1977 growth rate for value of shipments per employee compared to the 1977-1981 growth rate. These marginal rates of change were derived from the calculations done for factors 1 and 2. *Rationale*: This measure indicates an industry's ability to sustain its rate of growth, as well as its ability to resist economic downturns.

7. The industrial mix (shift) of absolute Indiana employment from 1977-1981 as a percentage of 1981 employment. *Rationale*: The U.S. economy is shifting from an industrial to a service orientation. Generally speaking, the more concentrated employment in a given industry is in Indiana as compared with the nation, the greater the employment losses that can be expected during a recession. Conversely, the closer Indiana's industrial mix is to the national industrial mix, by SIC, the fewer jobs will be lost during a recession.

8. The national growth rate in employment by SIC from 1981 to 1982. *Rationale*: The 1981-1982 period was a recession.

Table 2
Ranking of Top 20 Targeted Industries for Indiana

SIC	*Industry*	*Overall*	*Composite Score**	*Growth Potential*	*Recession Proof*	*Economic Impact*
2647	Sanitary paper products	1	22	5	6	11
3832	Optical instruments & lenses	2	28	1	7	20
259	Misc. furniture & fixtures	3	30	13	4	14
357	Office & computing mach.	4	34	7	2	25
3541	Metal-cutting mach. tools	5	37	4	17	16
353	Construction machinery	6	39	2	28	9
3769	Space vehicle equipment	7	41	15	8	18
3479	Metal coating, allied ser.	8	41	12	19	10
3823	Process control instruments	9	43	9	1	33
2992	Lubricating oils & greases	10	43	3	33	7
3535	Conveyors & conveying equipment	11	45	6	31	8
2833	Medicinals & botanicals	12	49	22	24	3
3498	Fabricated pipe & fittings	13	50	28	11	15
3399	Primary metal products	14	50	11	35	4
3825	Instruments to measure electricity	15	53	26	5	22
2819	Industrial inorganic chemicals	16	58	8	45	5
3324	Steel investment foundries	17	63	10	41	12
287	Agricultural chemicals	18	63	14	47	2
2795	Lithographic platemaking	19	64	20	12	32
3573	Electronic computing equipment	20	68	36	3	29

* In the event of a tie in the composite score (for example, SIC 3769 and 3479, each with a score of 41), the recession proof rank was used as a tie-breaker. For the overall ranking of the composite scores, it was not necessary to divide by the number of categories; each SIC had sufficient data to be ranked in all categories.

Therefore, this factor measures an industry's national performance during a recession.

9. The difference between the Indiana SIC percentage point employment growth for 1981-1982 and the national SIC growth rate. *Rationale*: This measure compares Indiana industrial performance during a recession to national trends.

Economic Impact

10. The 1981 national ratio of value of U.S. shipment dollars per number of U.S. employees. *Rationale*: This measure provides an absolute measure of a given industry's per employee effect on the economy in general.

11. 1981 location quotients for each Indiana industry. *Rationale*: The use of location quotients is one way to identify export-oriented industries (that is, those that market products outside the local economy). Generally speaking, location quotients ≥ 1 signify basic, export-oriented businesses, while location quotients < 1 identify non-basic industries oriented to the local market.

12. Growth in location quotients from 1977 to 1981. *Rationale*: This measure shows the increasing or decreasing ability of an industry to export its product, thereby increasing or decreasing its multiplier effect on the local economy.

The various percentage changes and employment ratios were calculated for all 56 industries. In some instances, data were not available to calculate a value for each of the 12 economic factors for a specific industry. Usually the unavailable figures were Indiana data for an industry from 1972 to 1977; thus, it was impossible to make inter-period comparisons. (Here intuition and statistics part company. When industry data exist for the 1977-1981 period but not for 1972-1977, that industry must have experienced recent growth in Indiana. However, such an intuitive realization was of little help statistically.)

Table 1 displays the raw values for these 12 economic factors. For each factor, the raw scores were ranked 1 through 56. If, due to insufficient data, a raw score was not calculated for one or more of these factors, the industry in question did not receive a ranking for that factor or factors.

Next, for each of the three categories (growth potential, recession-proof, and economic impact), these "factor rankings" were summed. Because data for some industries were unavailable, this sum of an industry's category ranking was divided by the number of factors for which the industry was ranked. This calculation produced "composite scores," which were ranked to yield a "category ranking." The lower the composite score, the higher the category ranking. Finally, to develop an overall ranking, these three category rankings were in turn summed and ranked from lowest total composite score to highest.

As an example of how these rankings were developed, consider optical instruments and lenses (SIC 3832). For the growth potential category, data were available only for factor 4 (the difference between Indiana and U.S. employment growth rates, 1977-1981) and factor 5 (Indiana's increase in its regional share of employment from 1977-1981). For both factors, SIC 3832 ranked second. Therefore, its composite score for the growth potential category was 2 (4 ÷ 2). This was the lowest of the 56 composite scores for this category. SIC 3832, therefore, was ranked first in terms of growth potential.

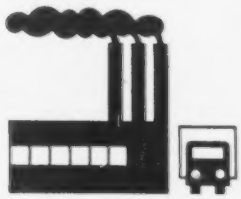
For the recession-proof category, data were available to rank SIC 3832 for factors 7, 8, and 9 (1981 industrial mix, national employment growth 1981-1982, and the percentage point difference between the 1981-1982 employment growth rates for the U.S. and Indiana). SIC 3832 scored 40, 8, and 3 respectively, for a composite score of 17. Therefore, it ranked seventh out of 56 in the recession-proof category.

Finally, for the economic impact category, SIC 3832 scored forty-fifth in the size of its location quotient (factor 11) and second in terms of the percentage growth in its location quotient from 1977-1981 (factor 12). Thus, its composite score was 23.5. This was good enough to rank SIC 3832 (optical instruments and lenses) twentieth in terms of economic impact.

Table 2 lists the overall rankings of the top 20 industries, as well as how they ranked among all 56 industries in each of the three categories. As the table indicates, SIC 3832, with a composite score of 28, ranked second overall.

Broad Economic Trends

A review of the industries listed in Table 2 reveals that three broad trends are under-



way in the economy.

New households. The first trend reflects the demographics of new households being formed. For example, a major product of the sanitary paper products industry (SIC 2647) is the disposable diaper. The *U.S. Industrial Outlook 1985*, published by the U.S. Department of Commerce, forecasts an average annual growth rate of 6.5% for that industry to the end of the decade.[5] Furthermore, the disposable diaper industry projects a growth rate of 5% per year in the export market, primarily to Latin American and Asia.

The formation of new households is also an underlying factor in the growth in demand for furniture and fixtures (SIC 259), as well as construction-related machinery (SIC 353). Growth in demand for construction machinery—generally small and medium-size earth-moving equipment—is projected at 4% per year to 1989. Another factor in the increased demand for construction machinery is the need to repair and replace our decaying roads, bridges, and water and sewage treatment facilities.[6]

High technology. A second broad category is the high technology sector. However, with the exception of SIC 3825, instruments to measure electricity, Indiana has less than its hypothetical share of the nation's employment in these kinds of industries when measured with the use of location quotients (LQ). For example, Indiana's 1981 LQ for SIC 3825 was 1.14. For SIC 3769, space vehicle equipment, the LQ was .55. In SIC 3832, optical instruments and lenses, the LQ was .363. And for SIC 357, office and computing machinery, the LQ was .05.

However, while Indiana as a whole is not blessed with an abundance of jobs in these industries, since 1982 the Indiana Department of Commerce has been building on the natural attractions that universities such as Indiana and Purdue hold for such firms. Even before efforts were organized at the state level to attract these industries, the growth of these high-technology industries in Indiana as measured by their LQ was well underway. From 1977 to 1981, the LQ growth rates of these industries ranged from 56.2% for SIC 3825 (instruments to measure electricity) to 350% for SIC 3832 (optical instruments and lenses). (See Table 1.)

Smokestack industries with growth potential. The last broad category of industries are those that usually are considered smokestack industries, but with the distinction that certain advances in production process technology give them good growth prospects for the future.

For example, SIC 3498, fabricated pipe and fittings, is expected to grow 4.5% annually to 1989.[7] To become more productive, this industry is increasing the use of robotics in the production process and moving towards smaller specialty firms. Another industry, steel investment foundries (SIC 3324) is using modern electric arc furnaces to produce finished and semifinished steel products.

Growth in demand for construction machinery—generally small and medium-size earth-moving equipment—is projected at 4% per year to 1989.

Finally, two related industries in this category are the agricultural chemicals industry (SIC 287) and the industrial inorganic chemical industry (SIC 2819). Within SIC 287 is the nitrogenous fertilizer industry (SIC 2873), which currently is operating at 90% of capacity nationwide. Because SIC 2819 is a major producer of sulfur dioxide, aluminum, and sodium compounds—ingredients used in the production of fertilizer—these two industries are closely related. An emerging production technology field with an application in these industries is, interestingly enough, the removal of sulfur dioxide from coal burned in electric power plants. A number of pollution control technologies are looking at ways to produce fertilizer as a salable by-product.

How Communities Can Use These Tables

This study began with the premise that there are two significant reasons that Indiana manufacturing has underperformed during the last several business cycles in comparison with the national economy. These reasons are Indiana's industrial mix and an overall inter-industry employment growth history that compares poorly to the nation generally.

Based on this premise, three sets of economic measures were developed to identify those industries that have good employment growth prospects, are not susceptible to economic downturns, and have the potential to increase employment throughout the local economy through a multiplier effect. Applying these economic measures resulted in a list of targeted industries, a list that community leaders can use to increase employment opportunities in their areas.

Because of the iterative ranking process used in developing this list of industries, local officials have a great deal of flexibility in placing particular emphasis on those aspects of an industry's economic performance that a given community deems most desirable. In this study, all 12 economic factors were given equal weight, as were each of the three categories into which they were grouped. Different communities, wishing to emphasize one aspect over another, can easily assign weights to the various measures, thereby producing a different overall ranking of targeted industries.

Finally, this study's methodology for targeting industries lends itself for use in conjunction with local community economic assessment studies. Such reviews, which usually are undertaken to identify the kinds of industries that most likely would be attracted by a community's existing infrastructure and local amenities, could serve as an additional screening mechanism. □

5. Indiana Department of Commerce, *Indiana Targeted Industries Program*, Division of Economic Analysis, October 1984.

6. Fred Moavenzadeh, "Construction's High Technology Revolution," *Technology Review*, October 1985: 36.

7. Forecasts in this section are from the *U.S. Industrial Outlook 1985* (note 5).

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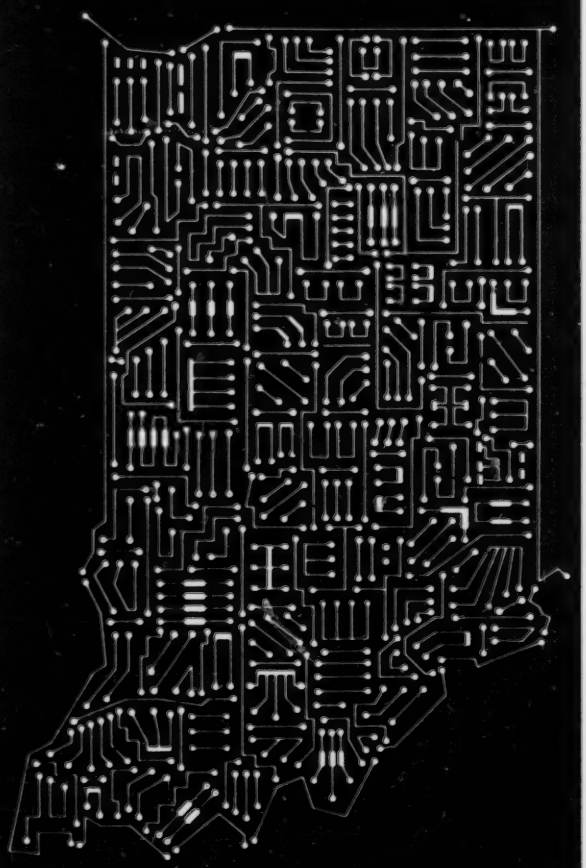

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The Outlook for Manufacturing in Indiana

We have to accept the fact that at least some part of what is termed deindustrialization and is generally attributed to foreign competition or other exogenous factors is instead a consequence of the sluggish performance of the overall national economy during the 1970s.

Casual observation suggests that much of Indiana's manufacturing output is sold to other Great Lakes states. Consequently, the impact of the national economy on Indiana manufacturing may be predominantly an indirect one.

While Indiana's industrial mix played a major role in job losses during periods of recession, it did not provide an equal and opposite effect to stimulate employment growth during periods of economic expansion.

Indiana's deindustrialization appears to be more a consequence of its dependence on Great Lakes markets than of anything unique to Indiana. Neither national business conditions nor trends have very large direct effects on Indiana, and the effects that are present are positive rather than negative. Because of Indiana's dependence on markets in Illinois, Ohio, Michigan, and Wisconsin, deindustrializati.m in Indiana simply mirrors the deindustrialization taking place in these states.

It is possible that if this region had the same industrial mix as the rest of the nation, it would not be experiencing deindustrialization.

Whatever effect the national economy exerts on the Great Lakes region's manufacturing activity, Indiana's manufacturing output will have a tendency to mirror that same effect. A 1% decline in real GNP, for instance, results in a decline in Indiana manufacturing value added of 2.2% to 2.8%.

This state must diversify its industrial base. Furthermore, diversification must be achieved by targeting industries that have good growth potential, are minimally vulnerable to recession, and would have a significant community economic impact.

Indiana Business Review

Indiana Business Research Center
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January-February 1986

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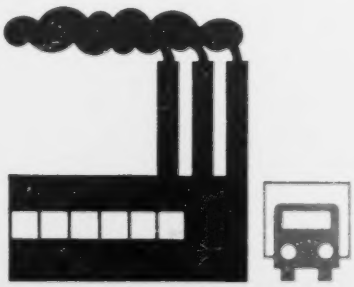

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